



## Case Report

## Tuberculous Peroneal Tenosynovitis

### 結核性腓骨肌腱鞘炎

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## ABSTRACT

Musculoskeletal tuberculosis accounts for 1–5% of all cases of tuberculosis. Tuberculous tenosynovitis is an uncommon form of musculoskeletal tuberculosis occurring primarily in the hands and wrists and is rarely reported in the tendons of the feet. A case of tuberculous peroneal tenosynovitis is reported. Although tuberculosis is an uncommon cause of tenosynovitis, particularly in the foot, it should be included in the differential diagnosis of patients suffering from persistent swelling and pain in the hind foot, especially in countries where tuberculosis is prevalent.

## 中文摘要

肌肉骨骼系統結核佔結核病的病例1–5%。結核性腱鞘炎是一種罕見的肌肉骨骼結核病。主要是出現在手和手腕，很少涉及到腳的肌腱。現報告結核性腓骨肌腱鞘炎一例。

## Introduction

Musculoskeletal tuberculosis accounts for 1–5% of all cases of tuberculosis.<sup>1–3</sup> Tuberculous tenosynovitis is an uncommon form of musculoskeletal tuberculosis occurring primarily in the hands and wrists and is rarely reported in the tendons of the feet.<sup>1–4</sup> It has been sporadically reported in the Achilles tendon,<sup>2–4</sup> anterior tibial tendon,<sup>5</sup> flexor digitorum longus<sup>1</sup> and extensor hallucis longus tendons,<sup>6</sup> and peroneal tendons.<sup>7–10</sup> A case of tuberculous peroneal tenosynovitis is presented here.

## Case report

A 54-year-old diabetic patient complained of spontaneous onset of right lateral ankle painful swelling at the right posterolateral ankle for 8 months (Figure 1). He was not malnourished and there was no history of preceding trauma. All along, the patient was afebrile and did not have any systemic upset. The swelling was fluctuating in size and he complained of pain over the swelling at nighttime and when he squatted. Physical examination revealed a soft swelling just posterior to the lateral malleolus and extended distally along the peroneal tendons. Radiographs did not reveal any abnormality. Magnetic resonance imaging and ultrasound studies

showed peroneal tenosynovitis (Figure 2). Open synovectomy with intraoperative precautions for tuberculosis was performed on September 2003 and showed massive fibrotic inflamed synovium around the peroneus brevis and longus tendons extended from midcalf region to the cuboid with rice bodies. The peroneal longus tendon was thickened at the peroneal tubercle. The synovium was negative for bacterial and fungal culture. Histology showed the presence of caseation and Langhan giant cells and was positive with Ziehl–Neelsen stain. The synovium was negative for tuberculous culture. Chest x-rays were normal. Early morning urine and sputum for acid fast bacillus was negative. A microbiologist was consulted and suggested a treatment regime with rifampicin 600 mg daily, isoniazid 300 mg daily, pyrazinamide 1.5 g daily, ethambutol 800 mg daily, and pyridoxine 10 mg daily for 2 months, and then rifampicin 600 mg daily and isoniazid 300 mg daily for a further 10 months.<sup>11</sup>

After the operation he was given an ankle and foot orthosis and was kept on nonweight bearing walking for 4 weeks. During the latest follow up, 113 months after the operation, the patient was asymptomatic and could achieve full squatting. Clinically, there was no local recurrence (Figure 3).

## Discussion

Tuberculous tenosynovitis is an uncommon form of musculoskeletal tuberculosis in itself and is usually associated with immunosuppressed patients.<sup>2,3</sup> Our patient had diabetes which

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**Figure 1.** Clinical photographs of the patient showing diffuse swelling posterior to the lateral malleolus.

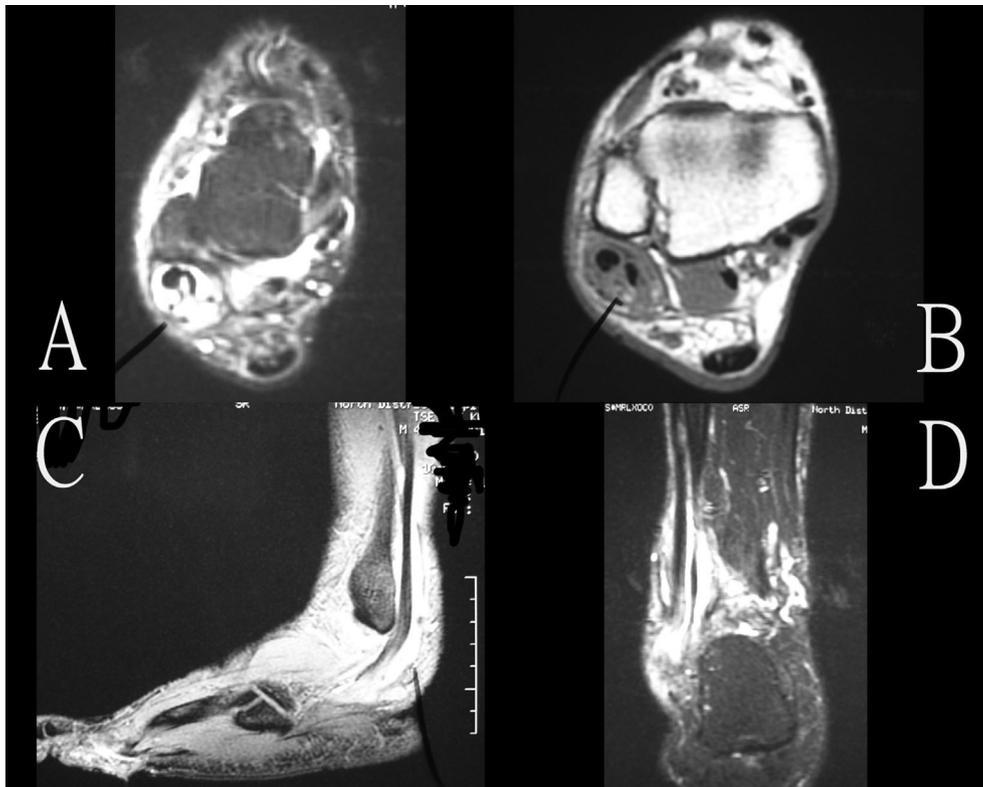
may have contributed to the development of tuberculous peroneal tenosynovitis.

The natural history of tendons being primarily involved in the disease process remains elusive. There are two theories for the development of tuberculous tenosynovitis: direct inoculation (trauma, syringe) and haematogenous dissemination from a primary focus, usually the lung. In most cases, however, this primary infection heals without clinical evidence of the disease, however, the secondary focus may sometimes become active years later. Consequently, the absence of active pulmonary tuberculosis or even signs of healed disease does not eliminate the possibility of secondary tuberculous infection.<sup>2,3</sup>

The disease is classified into three stages: the earliest hygromatous form, a serofibrinous form, and a fungoid form. The hygromatous form usually appears as a serous exudate within a normal-appearing tendon sheath; however, the tendon sheath may be thinned or replaced by granulation tissue. As the infection evolves, the serofibrinous form is manifested by obliteration of the tendon sheath with fibrous tissue and caseous inflammatory debris. Rice bodies appear in the synovial fluid, and involvement of the tendon itself with granulation tissue is seen. Inter-tendinous adhesions may form, or complete rupture may occur. The fungoid stage involves extensive caseation and granulation tissue formation, causing obliteration of the tendon and sheath with formation of sinus tracts and a cold abscess.<sup>7,12</sup> Our case presented at the serofibrinous stage as demonstrated by the presence of fibrotic inflamed synovium and rice bodies during the operation.

Most patients with tuberculous tenosynovitis are aged > 60 years. The disease starts as a slow growing insidious swelling along the involved tendon. There may be a history of tuberculosis or exposure. Pain, erythema, and restriction of joint movements may occur.<sup>2</sup> The manifestations are rather nonspecific and may mimic post-traumatic, neoplastic, or other inflammatory diseases, leading to misdiagnosis. Laboratory findings are also nonspecific. Furthermore, treating such cases as chronic disorders and with corticosteroids disguises and delays the correct diagnosis.<sup>2,3</sup>

Characteristic magnetic resonance imaging features include synovial thickening with relatively little synovial sheath fluid, by contrast to acute suppurative tenosynovitis, where synovial sheath fluid is the predominant feature. The synovial thickening is due to replacement of the synovial sheath with granulation tissue. "Rice bodies" or "melon seeds" are fibrous masses (tubercles) present in 50% of tuberculosis cases. They favor a diagnosis of tuberculosis if detected on ultrasound or seen during surgery.<sup>1</sup>



**Figure 2.** Magnetic resonance imaging showed peroneal tenosynovitis: (A, B) transverse views; (C) sagittal view; (D) coronal view.



**Figure 3.** Postoperative clinical photographs showing no local recurrence and the ankle range of motion was full.

Because complete excision of the lesion followed by antituberculous chemotherapy is the treatment of choice for tuberculous tenosynovitis of the foot and ankle,<sup>3–5</sup> making the correct diagnosis is the single most important step to the success of treatment. An inordinate delay in confirming this diagnosis is not uncommon because of lack of suspicion, its ability to resemble other forms of rheumatologic disease, and absence of tuberculous disease elsewhere or in the past.<sup>1</sup>

One of the following criteria can be used to diagnose extrapulmonary tuberculosis: (1) *Mycobacterium tuberculosis* revealed in culture material; (2) biopsy material showing characteristic caseating granuloma typical of *M. tuberculosis* in gross pathology sometimes accompanied by demonstration of acid fast organisms in histology specimens; and (3) autopsy material reveals caseating granuloma typical of tuberculous infection.<sup>1–3</sup> The diagnosis of this case was based on the presence of caseation and Langhan giant cells and acid-fast bacilli testing positive with Ziehl–Neelsen stain in the histological specimen although the tuberculosis culture was negative.

In conclusion, although tuberculosis is an uncommon cause of tenosynovitis, particularly in the foot, it should be included in the differential diagnosis of patients suffering from persistent swelling and pain in the hind foot, especially in countries where tuberculosis is prevalent.<sup>1,4</sup>

#### Conflicts of interest

All contributing authors declare no conflicts of interest.

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