Tuberculosis tenosynovitis of the flexor tendons in the wrist: a case report

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Extra-pulmonary tuberculosis is a rare form of tuberculosis that can pose diagnostic and therapeutic challenges. We report a case of extra-articular tuberculosis tenosynovitis in a 45-year immunocompetent patient. The symptoms of the patient mimicked De Quervain’s disease and carpal tunnel syndrome. Following pathological confirmation of the diagnosis, the patient recovered following a six-month antitubercular chemotherapy.

Key words: Tenosynovitis; mycobacterium tuberculosis; flexor tendons; wrist.

Tuberculosis is an endemic disease in tropical regions, and its outbreak is related to many promoting factors, such as immunosuppression due to HIV infection. In 2007, the World Health Organization (WHO) reported the incidence of the tuberculosis as 206/100000 inhabitants per year, with 9.3 million new cases per year.[1] While extra-pulmonary form of the tuberculosis is rare, the involvement of the tendon sheaths is more unusual.[2] Flexor tendons are more commonly involved than the extensor tendons.[3] We report a case of extra-articular tuberculosis tenosynovitis in an immunocompetent patient.

Case report

A 45-year old woman presented with a painful swelling on the anterior aspect of her left wrist in October 2009. This tumefaction had been gradually developed in the last few months and the patient had not benefited from six consecutive betamethasone injections. On physical examination, there was edema, inflammation and parasthesia on the affected area. There was a flexion contracture in the last four fingers and a thumb movement was painful. Finkelstein test and Tinel’s sign were positive. X-rays of the wrist did not reveal any abnormality. However, sonographic examination revealed a heterogeneous hypoechogenic lesion in both the palmar side of the wrist and the hand suggesting a phlegmon. The magnetic resonance imaging showed increased intensity around the flexor tendons suggesting inflammatory infiltration (Fig. 1). The C Reactive Protein was within normal limits and erythrocyte sedimentation rate was high at the first and second hour. The tuberculin skin test was normal and the chest x-ray did not show any parenchyma lesion. The HIV test was negative. An open surgical biopsy was performed. During surgery, there was a fusiform inflammatory swelling around the flexor tendons, without phlegmon formation. There was also swelling on the median nerve (Fig. 2).

The swollen inflammatory tissue was removed for bacteriological and histological examination. Also transverse carpal ligament was released. Histological exami-
nation revealed epitheloid granulomas and giant cells with central caseous necrosis confirming the diagnosis of tuberculosis (Fig. 3). Bacteriological cultures remained sterile. The patient had a 6-month anti-tubercular treatment consisting of rifampicin, isoniazid, pyrazinamide, and ethambutol (ETM) for the first two months followed by a combination of rifampicin and isoniazid for the last 4 months. There was no side effect except paresthesia on the median nerve sensory area, which disappeared later. At the last follow-up, the patient reached her old activity level with normal hand functions.

Discussion

The infection of the tendinous sheath by the mycobacterium tuberculosis is a rare form of the extra-pulmonary tuberculosis. This infection of the tendinous sheath frequently occurs on the wrist, the hand, the foot and the ankle. The tuberculous tenosynovitis represents for less than 5% of the cases with musculoskeletal involvement.\[^{4,5}\] The diagnosis of the tuberculous tenosynovitis may be either difficult or delayed due to its non specific symptoms as well as its insidious onset.\[^{6}\] The inflammatory tenosynovitis around the carpal tunnel may compress the median nerve, mimicking the symptoms of canal carpal syndrome due to a mechanical cause.\[^{7,8}\] Lee reported that carpal tunnel syndrome is frequent in tuberculous tenosynovitis of the flexor tendons in the wrist.\[^{7}\] Wallach and MasmJean stated that the tuberculosis is an important infectious etiology for secondary carpal
tunnel syndrome.[9] Chen and Eng reported that tuber-
culous tenosynovitis may also mimic De Quervain’s te-
osynovitis.[10] Kang et al., in their systematic histologi-
cal analysis of the space occupying lesions in the carpal
tunnel, reported a high incidence of 25% for tuberculous
lesions.[11] Therefore, the incidental finding may be sup-
posed to be the most common presentation for tubercu-
losous tenosynovitis. The infection of the tendon sheath
posed to be the most common presentation for tubercu-
loous tenosynovitis. The infection of the tendon sheath
may result from the hematogenous dissemination of the
bacillus.[12] However, direct inoculation of the tendon
may result from the hematogenous dissemination of the
bacillus.[12] However, direct inoculation of the tendon
sheath by the Koch bacillus were also reported.[13]

In our case, repeated corticosteroid injections were
performed before his initial presentation. Laulan et
al. reported the role of local steroid injections on nonspe-
cific fibrous tenosynovitis, whereas the key role of the local
corticoid injections in joints and tissues is still unknown.
[14] However the possibility of a tuberculous tenosynovitis
should be considered before performing a steroid injec-
tion.[15] In our case while the physical examination and
chest x-ray were normal, but the sonographic examina-
tion revealed significant findings suggesting the disease.

The wrist x-ray may not show any abnormality, ex-
cept chronic cases with sequel. The magnetic resonance
imaging usually confirms the chronic tenosynovitis, but
not the specific origin of the disease. It also helps to plan
is essential for a complete examination of the whole ten-
don, exploring any tendon lesion or joint involvement.

The definitive diagnosis of the tuberculosis unavoid-
ably depends on histopathological analysis of the tissue
sampling showing epitheloid granulomas and giant cells
with central caseous necrosis. Kanavel reported three
stages in tendinous tuberculosis.[11] Stage I is character-
ized by the presence of a serous exudation with thickening
of tendon sheaths, followed by stage II, the prolifer-
ative stage with granuloma tissues made of “seed of rice”
aspects, and the stage III is characterized by the presence
of massive necrosis. Our case was characterized by the
increase in the tendon thickness and serous exudation,
corresponding to stage I of Kanavel.

The treatment of the tuberculous tenosynovitis is
typically medical based on standard protocols, which
should be performed in specialized health centers under
regular monitoring conditions because of the potential
side effects of the chemotherapy.

Primary surgical treatment should be recommend-
ed only in stage II lesions and tendon tears. Similarly,
Benchakroum et al. believe that surgery should be per-
formed not only in case of complications (i.e. abscesses,
neurological complications) but also when the medical
treatment fails.[16] After the surgical treatment, functional
rehabilitation should be introduced as soon as the his-
tological proof and the cicatrization were obtained. The
functional rehabilitation allowed our patient to recover
completely with full wrist and hand function.

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