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CASE REPORT
Hand

Candida albicans Flexor Tenosynovitis after Trigger Finger Release: A Case Report

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Summary: Tenosynovitis caused by fungi, especially *Candida* species, is rare. We report a case of an immunocompetent patient with finger flexor tenosynovitis caused by *Candida albicans* after trigger finger release (TFR). Intratendon sheath triamcinolone injection and subsequent TFR surgery might contribute to the occurrence of *Candida* tenosynovitis. We performed a tenosynovectomy twice because the pathology was unclear after the first tenosynovectomy. The culture of synovial tissue from the first tenosynovectomy was negative. However, the culture from the second tenosynovectomy tested positive for *Candida albicans*. We must consider the possibility of infection with low virulent pathogens such as fungi even if cultures are negative. When hand tenosynovitis is observed in immunocompromised or immunocompetent patients with invasive procedures, such as local injection or surgery, *Candida* infection should be considered a potential root cause even in the absence of positive results for the presence of fungi in the specimens being tested.
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As tenosynovitis caused by fungi, especially *Candida* species, is very rare, it is difficult to diagnose patients based on just the pathology before the culture results are obtained. We report a case of an immunocompetent patient with finger flexor tenosynovitis caused by *Candida albicans* after TFR.

CASE REPORT

An 84-year-old man visited our clinic due to pain, snapping, and flexion-locking of his right ring finger. His medical history included hypertension and myocardial infarction, with no history of immunodeficiency, diabetes, or smoking. We diagnosed his condition as a trigger finger and injected a mixture of 0.125 ml 1% lidocaine and 5 mg triamcinolone acetonide into the first annular (A1) pulley. Five months later, pain was again triggered. We administered the same injection again, and after 3 weeks, we operated on the A1 pulley release. During the operation, thickening of the A1 pulley was observed; however, synovial proliferation around the tendons was not observed, indicating the usual finding of a trigger finger. The wound healed without complications, and the symptoms were relieved within 10 days.

One month after the surgery, the patient complained of pain with a handgrip. The ring finger had limited flexion, and the wound site became swollen, without warmth to touch, tenderness, and redness. Magnetic resonance imaging showed bowstringing of the flexor tendons from the metacarpophalangeal joint through the middle phalanx, suggesting the rupture of the second annular (A2) pulley. We did not consider TFR as the possible cause of bowstringing as we have never experienced this complication after TFR. Considering the possibility of a bacterial infection, oral levofloxacin was prescribed to the patient for 3 weeks; however, the symptoms did not improve. Four months after the TFR, the swelling became more severe; however, the white blood cell count was normal, and the rheumatoid factor, C-reactive protein, anticyclic citrullinated peptide antibody, and T-SPOT.TB were all negative. Magnetic resonance imaging showed swelling around the flexor tendons, suggesting synovitis with fluid collection, in addition to the bowstringing of the flexor tendons. The fluid aspirated from the swollen region showed no crystals upon analysis, and the culture tested negative for bacteria except acid-fast bacteria and fungi. However, the final result of the acid-fast bacteria culture was still unavailable. At that time, we suspected a nontuberculous mycobacterial infection. Consequently, we performed tenosynovectomy and administered antituberculosis drugs (Fig. 1). Pathological examination of synovial tissue did not

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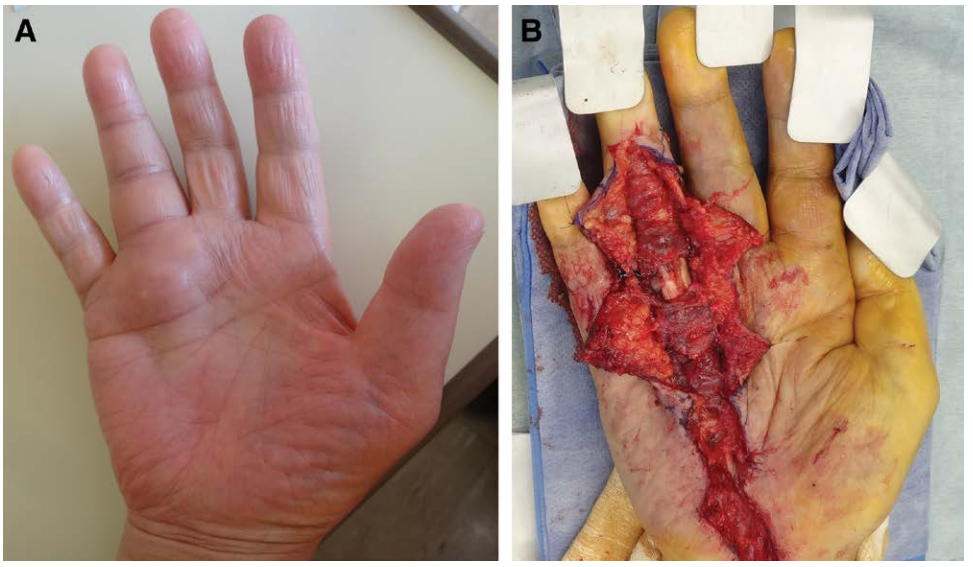

Fig. 1. Photographs at the time of the first tenosynovectomy of an 84-year-old male patient. The ring finger was swollen along with the flexor tendons (A). Flexor tenosynovitis was seen from the metatarsophalangeal (MP) joint through the middle phalanx (B).

reveal findings specific to rheumatoid arthritis or acid-fast bacteria. A culture of synovial tissue explant tested negative for bacteria except acid-fast bacteria and fungi. After the operation, the swelling did not improve, and a serous exudate from the surgical wound persisted. Four weeks after the first tenosynovectomy, we performed the second tenosynovectomy with resection of both the flexor tendons. A culture from the second tenosynovectomy was positive for *Candida albicans*, and oral fluconazole (400 mg/day) was administered. The swelling reduced, and the serous exudate decreased gradually. Two months later, the fluconazole dose was reduced to 300 mg per day and was continued for another month. Magnetic resonance imaging at 5 months did not show recurrence of tenosynovitis. The patient informed us that the level of disability in flexing the ring finger was more acceptable than undergoing additional surgery for flexor tendon reconstruction.

DISCUSSION

Candida species are known to cause cutaneous and subcutaneous hand infections, such as chronic paronychia.[1] Although hand infections are common, deep hand infections caused by *Candida* species are rare. To the best of our knowledge, six cases of *Candida* tenosynovitis have been reported in English literature. In these cases, the health background of the patients may have been the key factor in the underlying pathology leading to *Candida* tenosynovitis. Of the six cases, three were in patients who were immunocompromised due to acquired immunodeficiency syndrome, Buckley's immunodeficiency, or the administration of cyclosporine and methylprednisolone.[2–4] The other three cases involved patients who had invasive events before the occurrence of tenosynovitis. One patient with extensor tenosynovitis in the wrist and forearm had a history of recreational intravenous drug use and injection track marks on the dorsum of the forearm.[5] Another patient with finger flexor tenosynovitis underwent surgery to excise a ganglion cyst and received five triamcinolone injections.[6] The other case of flexor tenosynovitis from the wrist through the little finger occurred after a TFR of the thumb.[7] In our study, the patient received two triamcinolone injections into the flexor tendon sheath: one at the initial visit and the second 3 weeks before the TFR. It is possible that *Candida* on the skin was introduced into the tendon sheath due to injections and/or surgery. Previous reports have shown a relationship between corticosteroid injection and infection within a month or 90 days after the injection.[8,9] Therefore, in retrospect, TFR should have been avoided within 90 days of injection.

In our case study, two tenosynovectomies were required before *Candida* tenosynovitis was diagnosed. The analysis of aspirated fluid before the first tenosynovectomy and cultures from synovial tissue from the first tenosynovectomy yielded negative results for bacteria except acid-fast bacteria and fungi. The antituberculosis drugs did not alleviate the symptoms. At the second tenosynovectomy, we had not yet identified the cause for the pathology observed, and we were concerned that the disease would persist and spread to the surrounding tissues. Before the surgery, the patient voluntarily consulted another hand surgeon and was advised to undergo resection of the tendons. Therefore, we decided to resect the flexor tendons to remove the lesion aggressively. If the culture from the first surgery tested positive for *Candida*, we would not have resected the tendons. Our study shows the importance of considering the possibility of infection with low virulent pathogens like fungi even if cultures are negative. When hand tenosynovitis is observed, *Candida* infection should be considered as a possible pathology even with negative results for bacteria or fungi.

CONCLUSIONS

Candida tenosynovitis is rare; however, *Candida* infection should be considered as one of the differential diagnoses of tenosynovitis, not only in immunocompromised patients but also in immunocompetent patients undergoing invasive procedures, such as injections or surgery.

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