Successfully treating hand primary tuberculous synovitis by synovectomy combined antituberculous therapy

A case report

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Abstract

Rationale: Primary tuberculous infection in hand and wrist is a rare disease. Few articles reported on hand primary tuberculous synovitis.

Patient concerns: A 68-year-old Chinese male, without history of tuberculosis (TB), had complained of pain and swelling in right palm and little finger for 3 months. Patient came to our hospital on 9th Oct 2016. X-ray just showed soft tissue swelling in little finger. Magnetic resonance imaging (MRI) showed synovitis around flexor tendon of little finger, volar palm, and carpal tunnel. Notably, it also implied nodular images in little finger sizing 5 mm x 11 mm. Laboratory tests revealed C-reactive protein (CRP): 22 mg/L, erythrocyte sedimentation rate (ESR): 49 mm/h, and white blood cells (WBC): 11.8 x 10^9/L.

Diagnoses: He was diagnosed with primary hand tuberculous synovitis.

Interventions: The patient received aspiration biopsy in right palm guided by ultrasound on 13rd Oct and pathological examination indicated Mycobacterium tuberculosis (MTB) infection. We performed radical synovectomy and collected abnormal tissue for pathological examination on 18th Oct. Finally, result showed MTB infection, which was the same with the result of first pathological examination. Then, this patient received antituberculous treatment.

Outcomes: One year after operation, pain and swelling relieve and no recurrence of the clinical symptoms happened.

Lessons: Primary tuberculous synovitis of hand and wrist is rare, MTB infection should be considered as an infectious agent, especially in developing countries. Radical synovectomy and antituberculous treatment regain a satisfactory outcome.

Abbreviations: CRP = C-reactive protein, ESR = erythrocyte sedimentation rate, MTB = Mycobacterium tuberculosis, TB = tuberculosis, WBC = white blood cell.

Keywords: hand, Mycobacterium tuberculosis, radical synovectomy, synovitis, wrist

1. Introduction

Hand tuberculous infection is uncommon, especially for hand tuberculosis synovitis. Previous articles reported that the incidence of extrapulmonary tuberculosis ranged from 10% to 15%, of which the occurrence of hand tuberculosis infection accounted for <1%. As we known, extrapulmonary tuberculosis infection was secondary to pulmonary tuberculosis. Prakash and Mehtani presented a rare case that a teenager suffered from tuberculosis infection of isolated scaphoid and the patient was treated with multidrug chemotherapy. At 2-year follow-up, the condition had no recurrence. Soman et al showed a case that a patient suffered from tuberculosis infection after extra articular fracture of the distal radius treated by internal fixation. The diagnosis for hand tuberculosis is usually achieved with magnetic resonance imaging (MRI) and confirmed by histopathology and tubercular cultures. Here, we show a rare case on hand primary tuberculous synovitis. As far as we know, few reports on this topic.

2. Consent

The current study was approved by ethics committee of the Wuxi NO.9 People’s Hospital Affiliated to Soochow University. There is no need to obtain informed consent from the patient because all the data were collected and analyzed anonymously. Patient has consent to be the subject of the report.

3. Case report

A 68-year-old adult man who had no history of tuberculosis (TB), had complained of pain and swelling in right palm and little finger for 3 months, as shown in Fig. 1. His body temperature ranged from 37 to 38°C and symptoms such as pain, swelling, and movement limitation were generally non-specific. Hand x-ray just showed soft tissue swelling in little finger (Fig. 2). From Figs. 3 and 4, we could see extensive high signal in little finger, volar...
palm, and carpal tunnel according to T2-weighted image in MRI, indicating synovitis around flexor tendon. What’s more, MRI showed nodular images in little finger, approximately sizing 5mm × 11 mm. Additionally, laboratory tests revealed C-reactive protein (CRP): 22 mg/L, erythrocyte sedimentation rate (ESR): 49 mm/h, and white blood cells (WBC): 11.8 × 10⁹/L. Considering mentioned above, aspiration biopsy guided by ultrasound was used as a key procedure before surgery. In Fig. 5, we inserted a needle into the swelling of palm to collect some soft tissue for pathological examination and result implied Mycobacterium tuberculosis (MTB) infection. Then, we performed radical synovectomy, as shown in Figs. 6–8. We could see multiple rice bodies mainly around flexor tendons in little finger, distributing in finger, volar palm, and carpal tunnel. We conducted pathological examination on some typical tissues and got the same result with previous one (Fig. 9). So, we convinced that final diagnosis was hand primary tuberculous synovitis. Afterwards, this patient was treated with antituberculous treatment. Postoperative body temperature ranged from 36 to 37 °C. One week after surgery, laboratory tests indicated CRP: 10 mg/L, ESR: 22 mm/h, and WBC: 7.8 × 10⁹/L. One year after surgery, pain and swelling of hand and wrist relieve and indicators of laboratory tests turn to normal showing CRP: 8 mg/L, ESR: 14 mm/h, and WBC: 7.2 × 10⁹/L.

4. Discussion

According to the “Global Tuberculosis (TB) 2015 Report” of the World Health Organization, about one-third of the world’s population was infected by tuberculosis bacilli. Tuberculosis infection usually affects the respiratory system at first and then spreads extrapulmonary via lymphohematogenous route. As we known, the most common location is the vertebrae. It may also affect the pelvis, ankle, and wrist. Recently Bayram et al[6] showed a rare case on wrist tenosynovitis infected by MTB which
was diagnosed lately due to non-specific symptoms such as pain and swelling. Güner et al\cite{7} reported case series on wrist tenosynovitis infected by *Mycobacterium bovis*. Few reports on hand primary tuberculous synovitis had been published. Here, we presented a case that a 68-year-old man with pain and swelling in right palm and little finger for 3 months, shown in Fig. 1. Body temperature ranged from 37 to 38°C. X-ray of hand presented soft tissue swelling of little finger and MRI showed synovitis around flexor tendon sheath of right thumb, little finger, and wrist (Figs. 2–4). The result of aspiration biopsy guided by ultrasound (Fig. 5) on 13rd Oct indicated MTB infection. Then
we decided to operate radical debridement for that patient (Figs. 6–8). We collected some tissue for pathological examination and result showed MTB infection on 18th Oct (Fig. 9). Afterwards, the patient was treated with antituberculous treatment. One week after surgery, the CRP decreased from 22 to 10mg/L, ESR from 49 to 22mm/h, and WBC from 11.8 to 7.8×10^9/L. One year after surgery, pain and swelling resolve. Hand primary tuberculous infection is a rare disease and it is tough to be diagnosed due to lack of special symptoms. The treatment of hand tuberculosis remains no consensus. Some authors reported that conservative treatment including chemotherapy, rehabilitation, and immobilization had successful clinical results. Some thought that surgical treatment alone without antituberculous chemotherapy was more likely to cause recurrence. While a comparable study between antituberculous chemotherapy and surgery—chemotherapy combination demonstrated no significant difference. In our case, we performed a successful treatment for hand tuberculosis by radical synovectomy with antituberculous treatment. Up to now, pain and swelling of the hand have relieved and indicators of lab tests have turned to normal level. In spite of the satisfactory results, our treatment has some limitations. First, it needs a long term follow-up to assess the efficacy; second, this procedure may be too radical to effect functional recovery; third, we need more cases to evaluate this procedure.

In conclusion, hand primary tuberculous synovitis is rare. Few articles reported on this topic. It is easy to misdiagnosed, especially for patients without tuberculosis history and specific symptom. Tuberculosis infection should be kept in mind as an infectious agent when facing a case with unexplainable hand pain and swelling. Radical synovectomy with antituberculous treatment is an effective treatment, but we need further study to observe efficacy in a long term follow-up.

References

[1] Mihalko MJ, Martinez SE, Canale ST, Beatty JH. Tuberculosis and other unusual infections. Campbell’s Operative Orthopedics 12th ed. Mosby, Philadelphia: 2013; 773–86.
[2] Bai MA, Benzarri S, Sahli H, et al. Osteoarticular tuberculosis dactylitis: four cases. Int J Mycobacteriol 2015; 4: 230–4.
[3] Ocçelik IB, Aydin A, Sezer I, et al. Treatment algorithm in synovial tuberculosis of the hand and wrist: a report of three cases. Acta Orthop Traumatol Turc 2006; 40: 255–9. Turkish.
[4] Prakash J, Mehrani A. Isolated tuberculosis of scaphoid in the skeletonly immature: a rare cause of chronic wrist pain. BMJ Case Rep 2015; 2015: pii: bcr2015209369.
[5] Soman SM, Patel BN, Shah PD. Persistent posttraumatic wrist pain—tuberculous infection should be in the differential diagnosis. A rare case report. J Orthop Case Rep 2015; 5: 17–20.
[6] Bayram S, Eşen A, Altan M, et al. Tuberculosis tenosynovitis with multiple rice bodies of the flexor tendons in the wrist: a case report. Int J Surg Case Rep 2016; 27: 129–32.
[7] Güner MD, Bektas U, Akmeşe R. Wrist tenosynovitis due to Mycobacterium bovis infection: case series and review of the literature. Plast Reconstr Surg Glob Open 2015; 2:e262.
[8] Kotwal PP, Khan SA. Tuberculosis of the hand: clinical presentation and functional outcome in 32 patients. J Bone Joint Surg Br 2009; 91: 1054–7.
[9] Dhum F, Bellarti S, Mahloul M, et al. Tuberculosis of the hand and wrist: different aspects of 30 cases. Chir Main 2011; 30: 198–204.
[10] Vigler M, Mulett H, Hausman MR. Chronic Mycobacterium infection of first dorsal web space after accidental Bacilli Calmette-Guérin injection in a health worker: case report. J Hand Surg Am 2008; 33: 1621–4.
[11] Visuthikosol V, Kruvatavit N, Nityyanant P, et al. Tuberculous infection of the hand and wrist. Ann Plast Surg 1996; 37: 55–9.