CASE REPORT

Tuberculous osteomyelitis of the wrist presenting as a monoarthritis syndrome

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SUMMARY

Osteoarticular tuberculosis is the third most frequent location of tuberculosis after the lung and lymph nodes, accounting for approximately 10%–20% of all cases of extrapulmonary disease. Tuberculosis of the hand and wrist is the rarest osteoarticular location after the shoulder. The authors report the case of a 50-year-old woman without medical history who was diagnosed with isolated tuberculosis of the wrist presenting as monoarthritis. The diagnosis was confirmed by histopathological and microbiological examination. Late stages of osteomyelitis are even rarer without any predisposing factors such as immunosuppression. This case underlines the importance of including tuberculosis in the differential diagnosis of monoarthritic syndromes to prevent delayed initiation of therapy and consequent complications and bone damage.

BACKGROUND

Tuberculosis remains one of the most prevalent infectious diseases worldwide. The incidence has been increasing in the last decade due to increased

immigration and increasing number of patients under immunosuppressive treatments.^{1 2} The bone is the third most frequent site of tuberculosis after the lung and lymph nodes, representing approximately 10%–20% of all cases of extrapulmonary disease.^{3 4} Isolated involvement of the bone with tubercular infection is uncommon, and isolated infection of carpal bones is even more scarce, which contributes frequently to a delayed diagnosis.⁵ The authors describe an unusual case of tuberculous osteomyelitis, which mimicked features of acute monoarthritis of the wrist joint.

CASE PRESENTATION

A 50-year-old woman without any pathological history presented with mechanical pain and progressive swelling over the left wrist associated with paraesthesias in all ipsilateral fingers for several months. There was no history of trauma, surgical intervention or drug abuse. The patient received the bacillus Calmette-Guérin vaccination after birth, and there was no family history of tuberculosis and no signs/symptoms of systemic infection, such as fever, weight loss or night sweats. On physical examination, the patient presented with local swelling in the left wrist, which was painful on mobilisation. The analytical tests were normal. Serological tests for rheumatic diseases, hepatitis B and C, Brucella, Salmonella and Rickettsia were negative. The electroneuromyography of the upper limbs was compatible with carpal tunnel syndrome. There were no features of past or present infection on chest CT. The patient had been previously vaccinated with the bacillus Calmette-Guérin vaccine. The hand and wrist radiograph permitted observation of lytic destruction of all carpal bones and radius head (see figure 1). The MRI revealed osteomyelitis with multiple geodes and fading of articular spaces (see figure 2). The patient was submitted to a surgical biopsy, and the histopathological examination revealed giant cell granulomas with epithelioid cells and caseous necrosis. Further, *Mycobacterium tuberculosis* was isolated in microbiological cultures. The treatment strategy was as follows: antibacillary chemotherapy was administered for a total of 12 months (isoniazid, rifampicin, pyrazinamide and ethambutol for 2 months, and isoniazid and rifampicin for 10 months). The patient was compliant to the treatment, did not have any major side effects and full drug susceptibility was confirmed. Moreover, the swelling progressively diminished, but mild functional impairment persisted, to some degree, due to established bone destruction (see figure 3).

Figure 1 Plain radiograph of the forearm and wrist, anteroposterior view, showing osteolytic lesions in the distal end of the radius and carpal bones.

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Figure 2 MRI of the forearm and wrist showing erosion/cavity in the distal portion of the radius, oedema and geodic osteolysis in all carpal bones, as well as destruction of the radiocarpal and intercarpal articulations.

DISCUSSION

Even though Portugal is a country with low incidence of tuberculosis, it scores the highest incidence in Western Europe with 20 cases per 100 000 people in 2015. Predisposition to infection is associated with immunosuppression from any cause (except old age), nutrition status, alcohol or drug abuse, and positive history of or exposure to tuberculosis.^{2–6} Although the lungs represent the most commonly affected site, osteoarticular involvement—although rare—is also an important manifestation of the disease. In such cases, there is mainly spondylitis or a monoarthritis of weight-bearing joints such as hip, knee, shoulder or elbow.¹ Tuberculosis of the hand and wrist is the rarest osteoarticular location after the shoulder. The osseous inoculation is usually haematogenous—from an active or latent pulmonary or gastrointestinal source. Typically, it evolves slowly over several years, including an early stage—characterised by pain and swelling of the joint—and an advanced stage of articular destruction and abscess formation.^{7–8} Systemic symptoms (like night sweats, asthenia and anorexia), which usually accompany most cases of tuberculosis infection, are infrequent. Classic manifestations include pain, swelling and functional limitation. Abscess formation is present in 20%–25% of cases.⁹ Furthermore, a plain radiograph may show the Phemister's classic triad of juxta-articular osteoporosis, peripheral erosions and narrowing of the articular spaces. In advanced stages, geodic osteolysis extends to all carpal bones, which is described rarely (as in our patient). MRI is useful for abscess identification and articular involvement confirmation. The cornerstone of this disease remains the difficulty of the diagnosis, due to the non-specific clinical signs, which demand exclusion of other diagnostic possibilities such as other mycobacterial infections, pyogenic and fungal infections, brucellosis, sarcoidosis, rheumatoid arthritis, gout arthritis, and post-traumatic arthritis. The diagnosis requires an anatomopathological confirmation with giant cell granulomas, typical follicles surrounded by epithelioid cells and caseous necrosis, as we found in our case.^{3–10–11} Classically, hand tuberculosis is characterised as a paucibacillary lesion, thus Ziehl-Neelsen stains and tuberculosis cultures are frequently negative. Therefore, negative results on microscopic evaluation should not exclude the diagnosis, especially if accompanied by associated typical clinical,

Figure 3 Plain radiograph of the forearm and wrist, anteroposterior view, showing bone destruction in the distal end of the radius and carpal bones after 12 months of treatment.

radiological and histopathological features.^{12–13} In this case, the authors had histopathological and microbiological confirmation, but at the beginning it was difficult to raise the level of suspicion: there were no commonly identified precipitating factors like trauma, radial artery catheterisation, immunosuppression or malnutrition.^{1–3} The diagnosis derived from typical radiological and histopathological findings. The classic long-term treatment, which the patient completed, entails a 9-month course of isoniazid, rifampicin, pyrazinamide and ethambutol.^{14–16} It can be extended depending on the tissue affected: 6 months for skin infections, 9 months for tenosynovial infections and 12 months for bone infections, as was the case for our patient.¹⁷ However, there are still some controversies regarding the treatment options for tuberculosis of the hand and wrist, namely whether surgery should be proposed as an alternative to chemotherapy or as a combination strategy in association with chemotherapy. There was no recurrence difference between chemotherapy alone and surgery combined with chemotherapy. It should be performed in patients who do not respond to chemotherapy or in advanced stages with articular and bone destruction.^{13–14–18} The present case

highlights the necessity of increased awareness of osteoarticular tuberculosis, as it must be considered as a differential diagnosis in monoarthritic syndromes. Early diagnosis is crucial to prevent articular destruction and lifelong functional impairment.

Learning points

- Osteoarticular tuberculosis must be considered as a differential diagnosis of monoarthritis.
- MRI is useful for articular involvement confirmation.
- Early diagnosis is crucial in preventing articular destruction and lifelong functional impairment.

Contributors MJL and MB worked towards the conception and design of the work. MJL was responsible for data collection, analysis and interpretation. MJL and IF drafted the article. FF and MB revised the article. IF, MJL, MB and FF approved the version to be submitted.

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REFERENCES

- 1 Spiegel DA, Singh GK, Banskota AK. Tuberculosis of the musculoskeletal system. *Tech Orthop* 2005;20:167–78.
- 2 Habib M, Tanwar YS, Jaiswal A, et al. Tubercular arthritis of the elbow joint following olecranon fracture fixation and the role of TGF-beta in its pathogenesis. *Chin J Traumatol* 2013;16:288–29.
- 3 Al-Qattan MM, Al-Namla A, Al-Thunayan A, et al. Tuberculosis of the hand. *J Hand Surg Am* 2011;36:1413–21.
- 4 Marzouki A, Bennani A, Almoubaker S, et al. Unusual presentation of isolated metacarpal tuberculosis. *Int J Mycobacteriol* 2012;1:215–7.
- 5 Siddiqui MA, Ali Rizvi SW, Ali Rizvi SA. Isolated tubercular scaphoid osteomyelitis: a case report. *Orthop Surg* 2012;4:64–6.
- 6 DGS, PORTUGAL Infecção por VIH, SIDA e Tuberculose em números. 2015. <http://www.dgs.pt/?cr=29118>
- 7 Benchakroun M, El Bardouni A, Zaddoug O, et al. Symptoms and outcome in tuberculosis of the wrist. *Rev. Chir Ortho et Rep Appareil Moteur* 2004;90:337–45.
- 8 Sbai MA, Benzarti S, Bouzaidi K, et al. A rare localization of tuberculosis of the wrist: The scapholunate joint. *Int J Mycobacteriol* 2015;4:161–4.
- 9 Subasi M, Bukte Y, Kapukaya A, et al. Tuberculosis of the metacarpals and phalanges of the hand. *Ann Plast Surg* 2004;53:469–72.
- 10 Karakaplan M, Köroğlu M, Ergen E, et al. Isolated tuberculosis of capitate and triquetrum. *J Wrist Surg* 2017;6:70–3.
- 11 Lozano P, Sanchis D, Coello M, et al. Artritis destructiva de muñeca secundaria a tuberculosis extrapulmonar. *Rev Esp Cir Ortop Traumatol* 2012;56:378–80.
- 12 Chandrasekharan J, Sambandam S, Cheriyaakara S, et al. Tuberculous tenosynovitis presenting as finger drop: a case report and a systematic review of the literature. *Muscles Ligaments Tendons J* 2016;6:258–63.
- 13 Bush DC, Schneider LH. Tuberculosis of the hand and wrist. *J Hand Surg Am* 1984;9:391–8.
- 14 Tuli SM. General principles of osteoarticular tuberculosis. *Clin Orthop Relat Res* 2002;398:11–19.
- 15 Kabakaş F, Uğurlar M, Turan DB, et al. Flexor tenosynovitis due to tuberculosis in hand and wrist: is tenosynovectomy imperative? *Ann Plast Surg* 2016;77:169–72.
- 16 Aboudola S, Sienko A, Carey RB, et al. Tuberculous tenosynovitis. *Hum Pathol* 2004;35:1044–6.
- 17 Patel MR. Chronic infections. In: Green DP, Hotchkiss RN, Peder-son WC, eds. *Green's operative hand surgery*. 4th edn. Philadelphia: Churchill Livingstone, 1999:1048–94.
- 18 Chandrasekharan J, Sambandam SN, Cheriyaakara S, et al. Tuberculous tenosynovitis presenting as finger drop: a case report and a systematic review of the literature. *Muscles Ligaments Tendons J* 2016;6:258–63.

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