CASE REPORT

Isolated tuberculosis of scaphoid in the skeletally immature: a rare cause of chronic wrist pain

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Accepted 31 March 2015

SUMMARY

The hand and wrist are rare sites for tuberculosis and account for less than 1% of all skeletal tuberculosis. Though rare, tuberculosis of the wrist is a cause of major morbidity. A common feature in the available reports on hand and wrist tuberculosis was a delay in diagnosis causing residual stiffness and pain after treatment. Minimal initial symptoms, rarity of the lesion and ability of wrist tuberculosis to mimic more common pathologies account for the delay. No report of isolated scaphoid lesion in the paediatric age group has ever been reported. We present one such case, which was treated with multidrug chemotherapy. At the end of treatment the patient regained complete range of motion was completely pain free. No reactivation of disease was seen over 2-year follow-up.

BACKGROUND

Despite efficacious antitubercular chemotherapy, tuberculosis remains a major health issue in developing countries. Osteoarticular tuberculosis accounts for 1–3% of all tuberculosis. The hand and wrist are rare sites for tuberculosis and account for less than 1% of all skeletal tuberculosis.¹ Though rare, tuberculosis of the wrist is a cause of major morbidity. A common feature in the available reports on hand and wrist tuberculosis was a delay in diagnosis causing residual stiffness and pain after treatment. Minimal initial symptoms, rarity of the lesion and ability of wrist tuberculosis to mimic more common pathologies account for the delay.² Most cases of wrist tuberculosis are reported in adults, generally starting as synovitis and proceeding to involve the bones, rapidly causing arthritis.¹ No report of isolated scaphoid lesion in the paediatric age group has ever been reported.

CASE PRESENTATION

A 12-year-old girl presented with painful swelling in the dorsum of the left wrist joint of 7 months duration (figure 1). There was history of on and off low grade fever and 4 kg weight loss in the past 7 months. The patient was unable to lift weight with her left hand. Her mother had a history of pulmonary tuberculosis for which she had taken 6 months of antitubercular therapy (ATT). The patient was not immunised and had not taken BCG.

Examination revealed mild swelling in the dorsum of the left wrist joint on the lateral aspect. There was no rise in temperature. There were no scars or sinuses. The wrist joint was tender on palpation on the lateral aspect, which was more

Figure 1 Clinical photograph of bilateral hands showing swelling in left dorsum of wrist.

pronounced at the anatomical snuff box. Wrist movements were painful at extremes of motion and more severe with radial tilting of the joint. There was no axillary/cervical lymphadenopathy. Systemic examination including the chest was essentially normal.

INVESTIGATIONS

Blood examination revealed anaemia (haemoglobin –8.5), elevated erythrocyte sedimentation rate (ESR) of 45 and a Mantoux test of 20 mm by 16 mm. Radiograph of the wrist at presentation suggested a lytic lesion on distal pole of scaphoid surrounded by a sclerotic rim. Other carpal bones were relatively spared (figure 2A, B). MRI showed a lytic lesion involving scaphoid with a break in its lateral cortical outline. Other carpal bones were relatively spared (figure 3A, B). An image-guided core biopsy (with Jamshedi needle—11G×10 cm; Medsurge India Pvt Limited, Chennai) (figure 4) under

Figure 2 (A and B) Anteroposterior and lateral X-ray of wrist showing a lytic lesion on distal part of scaphoid.

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To cite: Prakash J, Mehtani A. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2015-209569

Figure 3 (A and B) T1-weighted and T2-weighted MRI showing a lytic lesion involving scaphoid with a break in its lateral cortical outline.

regional anaesthesia was obtained and the sample was sent for histopathology, pus culture and sensitivity, Gram stain, acid-fast stain and culture on Lowenstein-Jensen (LJ) medium. There was no pus observed at the time of biopsy. Histopathological examination revealed tuberculosis with giant cell granulomas with central caseous necrosis. The presence of central caseous necrosis was highly suggestive of tuberculosis, differentiating it from other granulomatous diseases. There was a presence of Langhans type giant cells with a large mass of cytoplasm containing multiple small nuclei arranged peripherally (figure 5). Pus culture of the specimen obtained in biopsy was negative for organisms after 48 h of incubation. Extended culture and culture on LJ were also negative at 6 weeks.

TREATMENT

In the absence of pus, the patient was given an initial trial of conservative management. She was started on ATT for 18 months. Four drugs: isoniazid 5 mg/kg, rifampicin 10 mg/kg, ethambutol 25 mg/kg and pyrazinamide 15 mg/kg were given for an initial 3–4 months. With decrease in pain and decline in ESR, pyrazinamide was stopped after 3 months and the other three drugs were continued. Pain was relieved and ESR approached near normal after 7 months of starting ATT. Ethambutol was then stopped and two drug therapy was continued. The antitubercular therapy was maintained for 18 months.² Plaster slabs were used during the initial period to

Figure 5 The histopathological sample of biopsy of scaphoid with surrounding soft tissue showing tubercular granuloma, giant cells and numerous epithelioid cells.

alleviate pain. Hand function was evaluated using the modified Green and O'Brien score.³ The scores were recorded before starting of ATT and at the end of treatment. The case was followed for 2 years.

OUTCOME AND FOLLOW-UP

Follow-up X-rays were taken at 3, 6, 12 and 18 months. The final follow-up X-ray revealed complete mineralisation of scaphoid and radiographic healing of the lesion (figure 6A, B). At the end of treatment the patient regained complete range of motion and was completely pain free. The initial Green and O'Brien score was 45 and final score was 95. No reactivation of disease was seen over 2-year follow-up.

DISCUSSION

Musculoskeletal tuberculosis is a chronic and progressive disease that mostly affects weight-bearing joints. Involvement frequencies of anatomic regions are in the order of spine, hip and femur, knee and tibia, and ribs. Upper extremity presentations are not common and diagnosis may be late with an unusual clinical picture.⁴ In the literature, there have been some studies that have focused on tuberculous upper extremity involvement. In addition, there have also been reports on arthritis of the thumb, arthritis of the finger, midpalmar abscess, wrist osteoarthritis, tenosynovitis, metacarpophalangeal and interphalangeal osteoarthritis, and metacarpal and phalangeal osteitis, published in

Figure 4 Jamshedi needle used for biopsy, which is 10 cm long and 11 gauge (Medsurge India Pvt Limited, Chennai).

Figure 6 (A and B) Final anteroposterior and lateral X-ray showing remineralised and sclerosed lesion.

recent literature.^{5 6} Wrist and hand tuberculosis accounts for less than 1% of all skeletal tuberculosis.^{1 2} Most of the literature presents scattered case reports on these topics.^{7–9} There are a few case series, the largest being by Kotwal *et al*,² with 32 cases. Even in such a large series, there is not a single case of isolated scaphoid involvement. The PubMed search of tuberculosis scaphoid gave a single reported case in an adult patient.¹⁰ To the best of our knowledge, this is the first case of scaphoid tuberculosis in a skeletally immature patient.

Musculoskeletal tuberculosis is generally a secondary infection with primary focus elsewhere. However, among our patients, this was the first recorded episode of tuberculosis. Similar results were found by other authors. Kotwal *et al*² had no cases with pulmonary or other tuberculosis in their 32 patients. Benchakroun described 4 of 11 cases of wrist tuberculosis with active pulmonary tuberculosis.¹¹

Skeletal tuberculosis is a great imposter and may mimic many common pathologies. Differential diagnoses include rheumatoid and other seronegative inflammatory arthritis, benign and malignant neoplastic conditions, Keinbock's disease and metabolic conditions, including haemophilia and gout. The mimicking nature has also been emphasised in the literature with reports of scaphoid tuberculosis in adults mimicking as fractures or ganglion-like cysts.^{12–14} Careful history-taking, meticulous clinical examination, MRI, early biopsy and a high index of suspicion helps to differentiate these lesions. Further hypointense synovium on T2-weighted images along with central erosions may differentiate tuberculous arthritis from other types of monoarticular inflammatory arthritis. Tumours were sometimes difficult to differentiate without a biopsy.

Treatment of wrist tuberculosis has been a matter of debate. There are studies proposing surgical debridement. However, surgical debridement is controversial for wrist joint tuberculosis.^{15 16}

Learning points

- ▶ Tuberculosis of the wrist is rare and mimics more common pathologies; a very high index of suspicion is required to diagnose such cases early.
- ▶ Not all cases require surgical debridement and a fair trial of antitubercular therapy should be given.
- ▶ This case presents a number of peculiarities in terms of age and site of lesion, further emphasising that no age or site is free of tuberculosis infection, which should be kept as a differential in all chronic infective conditions.

It is stated that surgical debridement should be performed in patients who do not respond to 4 or 5 months of chemotherapy, because chemotherapy before the surgery prevents bony destruction and dissemination of disease.¹ Multidrug chemotherapy for 12–18 months without surgical debridement has been successfully employed by various authors for treatment of wrist tuberculosis.^{1 2 9 14} Kotwal *et al*, in their 32 cases, had to resort to surgical management in only eight cases. Even in these cases, initial trial of ATT was given and only those patients who did not respond to conservative management were taken up for surgery. A similar result was seen in our case, where an excellent outcome was obtained with only multidrug chemotherapy without any extensive surgery.

Competing interests None declared.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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