CASE REPORT

Tubercular osteomyelitis of the lateral-third of the clavicle

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SUMMARY

An elderly women with a chronic history of pain and swelling of the right clavicle was investigated. She also had constitutional symptoms. Clinical examination showed mild inflammatory signs over the lateral one-third of the clavicle and the swelling was hard. Clavicle X-ray showed a lytic lesion in the lateral-third of the clavicle and MRI revealed a focal hyperintense area with cortical breach involving the superior cortex of the clavicle. The diagnosis was confirmed as tubercular osteomyelitis after the biopsy, which showed chronic granulomatous inflammation, and the culture was positive for *Mycobacterium tuberculosis*. Pain resolved by 6 weeks, swelling by 4 months and complete radiological resolution was seen at 15 months after the initiation of antitubercular therapy. No deficit in function was seen. No relapse was noted at 1-year follow-up.

BACKGROUND

Primary tuberculosis of the clavicle is a very rare form of skeletal tuberculosis, accounting for less than 1%.¹ Few case reports and only one series have been published.^{1–7} The presentation of clavicular tuberculosis is varied, ranging from dull aching pain to swelling and discharging sinus.^{2–4} Primary tuberculosis in the clavicle is commonly seen in the medial one-third of the clavicle.^{2–4} Clavicular presentation in the lateral-third is very rare and leads to confusion in diagnosis and delay in appropriate management. We report a rare case of primary tuberculosis of the lateral-third of the clavicle presented as a lytic lesion without discharging sinus in an elderly women with no preceding history of trauma/fracture and no primary pulmonary or extra-pulmonary focus.

CASE PRESENTATION

A 65-year-old women reported to the out-patient department, with a history of pain and swelling in the right collar bone for 1 month (figure 1). She also revealed self-limited low grade fever, low appetite and non-specific body ache over 3 months. The dull, aching pain was insidious in onset. There was no history of trauma, productive cough, chest pain or bleeding from any sites nor were there other symptoms pertaining to major systems. Family history was not significant. On clinical examination, the patient looked pale; there was a soft swelling, tender to the touch, noted in the right lateral one-third of the clavicle. There was no discharging sinus seen. There was evidence of neither cervical nor axillary lymphadenopathy and systemic examination was normal. Complete blood counts showed haemoglobin of 9 g/dL, total leukocyte count of 8800 cells/mm³ with polymorph 56%, lymphocyte 42% and eosinophil 2%. Peripheral smear showed normocytic normochromic anaemia and the erythrocyte sedimentation rate was 44 mm/h. X-ray of the chest with clavicle revealed a lytic lesion at the lateral one-third of the right clavicle and the lung fields were clear (figure 2). MRI of the clavicle revealed a focal area of altered signal intensity seen in the lateral one-third of the right clavicle appearing hyperintense on short τ inversion recovery (STIR) images with a cortical breach involving the superior cortex of the clavicle; a small collection measuring 2.3×1.3×0.8 cm was seen communicating with the marrow cavity (figures 3–5). A 1.8×0.9×0.8 cm STIR hyperintense area was also seen in part of the supraspinatus tendon—likely a collection in the subacromial region posterior to the supraspinatus

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Figure 1 Clinical photograph of a 65-year-old woman who presented with swelling over the right side of the lateral-third region of the clavicle.

Figure 2 Anteroposterior radiograph of the right clavicle showing a lytic lesion on the lateral-third of the clavicle.

Figure 3 MRI of the right clavicle with right shoulder joint showing a focal area of altered signal intensity seen in the lateral-third of the right clavicle, appearing hyperintense on short τ inversion recovery (STIR) images with a cortical breach involving the superior cortex of the clavicle and a small collection measuring 2.3×1.3×0.8 cm seen communicating with the marrow cavity. There is a 1.8×0.9×0.8 cm STIR hyperintense area seen in part of the supraspinatus tendon—likely a collection in the subacromial region posterior to the supraspinatus muscle. There is mild joint effusion with fluid tracking along the biceps tendon in the bicipital groove.

Figure 4 MRI of the right clavicle with right shoulder joint showing a focal area of altered signal intensity seen in the lateral-third of the right clavicle, appearing hyperintense on short τ inversion recovery (STIR) images with a cortical breach involving the superior cortex of the clavicle and a small collection measuring 2.3×1.3×0.8 cm seen communicating with the marrow cavity. There is a 1.8×0.9×0.8 cm STIR hyperintense area seen in part of the supraspinatus tendon—likely a collection in the subacromial region posterior to the supraspinatus muscle. There is mild joint effusion with fluid tracking along the biceps tendon in the bicipital groove.

muscle. There was mild joint effusion with fluid tracking along the biceps tendon in bicipital groove. Open biopsy was performed, which revealed the diagnosis. The histopathology of the biopsy showed evidence of chronic granulomatous inflammation suggestive of tuberculosis. Ziehl-Nielson staining for acid-fast bacilli and culture for *Mycobacterium tuberculosis* were positive. The patient was treated with antitubercular therapy (ATT) for 18 months. There was an improvement in pain by 6 weeks and swelling was reduced by 4 months after the initiation of therapy. Repeat X-rays performed showed resolution of the lesion at 15 months (figure 6). No relapse was seen at 1-year follow-up.

INVESTIGATIONS

- ▶ Complete blood counts with peripheral smear.
- ▶ Erythrocyte sedimentation rate.
- ▶ X-ray of chest with clavicle.
- ▶ MRI of clavicle.
- ▶ Biopsy.

DIFFERENTIAL DIAGNOSIS

Cystic tumours, multiple myeloma, secondary deposits, pyogenic osteomyelitis and osteitis.

Figure 5 MRI of the right clavicle with right shoulder joint showing a focal area of altered signal intensity seen in the lateral-third of the right clavicle appearing hyperintense on short τ inversion recovery (STIR) images with a cortical breach involving the superior cortex of the clavicle and a small collection measuring 2.3×1.3×0.8 cm seen communicating with the marrow cavity. There is a 1.8×0.9×0.8 cm STIR hyperintense area seen in part of the supraspinatus tendon—likely a collection in the subacromial region posterior to the supraspinatus muscle. There is mild joint effusion with fluid tracking along the biceps tendon in the bicipital groove.

TREATMENT

Antitubercular therapy.

OUTCOME AND FOLLOW-UP

The patient improved and was discharged.

DISCUSSION

Primary tuberculosis of the clavicle is a rare entity.⁴ Although the true incidence is not known, the reported incidence of skeletal tuberculosis is 1–4%, of which spinal tuberculosis is most common, and tuberculosis of the clavicle constitutes less than 1% of all skeletal tuberculosis.² The incidence is common in the second and third decades of life, with a slight female preponderance.^{3–5} The most common site of involvement is the medial end of the clavicle, and the common local presentation is pain and swelling, followed by a cold abscess and persistent discharging sinus at the site of involvement.^{3–5} The indexed patient was, however, an elderly woman who presented with symptoms pertaining to the lateral one-third of the clavicle, which can be confusing when placed against the other differential diagnoses such as cystic tumours, multiple myeloma, secondary deposits, pyogenic osteomyelitis and osteitis. The radiological features often

seen are diffuse thickening, honeycombing, cystic lesions or sequestration. These features are unlikely to yield the diagnosis, and are generally indiscernible with cystic lesions such as tumours.⁴ The rarity of involvement and similarity of radiographic findings of clavicular tuberculosis pose a challenge in diagnosis. Although MRI is the investigation of choice, the diagnosis cannot be proved without pathological or microbiological evidence.¹ The gold standard tool is culture of *M. tuberculosis* from a biopsy of the clavicle. MRI can show loss of the normal hypodense cortices and is useful in determining the extent of the lesion along with the soft tissue involvement. Skeletal tubercular lesions can be haematogenous, or due to trauma or local extension of infected tissue. The usual source in adults is from iatrogenic trauma (surgery) or open fractures.^{6–7} If the spread is haematogenous, the primary focus may be active or quiescent in a pulmonary or extra-pulmonary site. We did not find any primary pulmonary source, and the patient had a history of neither trauma nor surgery, which was a challenge—we could confirm the diagnosis only after biopsy. The only additional clues pointing towards the diagnosis were the constitutional symptoms, raised erythrocyte sedimentation rate (ESR) and normocytic normochromic anaemia of chronic disease. Tumours such as

Figure 6 Anteroposterior view of the right clavicle showing the sclerosed lateral-third of the clavicle after complete treatment.

multiple myeloma can also have similar findings, but the ESR would be very high and the myeloma/plasma cells would be seen in the peripheral smear. Management is primarily medical, with ATT, rest of part in functioning position and active exercise of involved parts. The duration of ATT is debatable, but the consensus commonly follows three bactericidal drugs for 5–6 months during the intensive phase of treatment and two primary antitubercular drugs for 10–12 months.^{4 5} The response to treatment is assessed by improvement in clinical features and fall in ESR.⁴

The indexed patient had a highly functional range of movements, showed dramatic reduction in pain by 6 weeks and had a drop in ESR, after ATT initiation. However, the resolution of swelling was seen after 4 months and complete radiological resolution was achieved at 15 months. Surgery to remove the sequestered clavicular tissue can be performed if the disease is unresponsive to ATT.^{4 5 8}

Learning points

- ▶ Tubercular osteomyelitis of the clavicle should be taken into consideration if the symptoms are chronic and constitutional.
- ▶ Early diagnosis and treatment lead to favourable outcome.
- ▶ Although the most common site of involvement in tuberculosis of the clavicle is the medial one-third, the possibility of the lateral-third being involved should not be ignored.
- ▶ Culture of the biopsied tissues is the gold standard to diagnose tuberculosis of the clavicle, and antitubercular therapy remains the mainstay of treatment.

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Competing interests None declared.

Patient consent Obtained.

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REFERENCES

- 1 Shah J, Patkar D, Parikh B, *et al.* Tuberculosis of the sternum and clavicle: imaging findings in 15 patients. *Skeletal Radiol* 2000;29:447–53.
- 2 Dugg P, Shivhare P, Mittal S, *et al.* Clavicular osteomyelitis: a rare presentation of extra pulmonary tuberculosis. *J Surg Case Rep* 2013;2013;pii: rjt030.
- 3 Prakash J, Aggarwal S, Mehtani A. Primary tuberculosis of the clavicle. *Orthopedics* 2014;37:e879–84.
- 4 Tuli SM. *Tuberculosis of the skeletal system (bones, joints, spine and bursal sheaths)*. 4th edn. New Delhi, India: Jaypee Brothers; 2010. 172–3; chapter 16.
- 5 Aggarwal AN, Dhammi IK, Singh AP, *et al.* Tubercular osteomyelitis of the clavicle: a report of four cases. *J Orthop Surg* 2009;17:123–6.
- 6 Saglam F, Saglam S, Gulabi D, *et al.* Bilateral clavicle osteomyelitis: a case report. *Int J Surg Case Rep* 2014;5:932–5.
- 7 Balakrishnan C, Vashi C, Jackson O, *et al.* Post-traumatic osteomyelitis of the clavicle: a case report and review of literature. *Can J Plast Surg* 2008;16:89–91.
- 8 Khan SA, Zahid M, Asif N, *et al.* Tuberculosis of the sternoclavicular. *Indian J Chest Dis Allied Sci* 2002;44:271–3.

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