CASE REPORT

Scapular bone destruction: do not forget to think of tuberculosis in endemic areas

Barun Kumar Sharma,¹ Varun Kumar Singh,² Kumar Nishant,² Deepak Das³

¹Department of Radiodiagnosis, Sikkim Manipal Institute of Medical Sciences, Gangtok, Sikkim, India

²Department of Surgery, Sikkim Manipal Institute of Medical Sciences, Gangtok, Sikkim, India

³Department of Pathology, Sikkim Manipal Institute of Medical Sciences, Gangtok, Sikkim, India

Correspondence to
Dr Varun Kumar Singh,
varunsingh.vks@gmail.com

SUMMARY

Tuberculosis is an endemic disease of worldwide concern. The most common involvement is in the form of pulmonary tuberculosis. Musculoskeletal system is involved in 20–30% of cases of extrapulmonary tuberculosis. Among these cases of musculoskeletal tuberculosis, vertebral column is most commonly involved followed by long bones. However, tuberculosis of flat bones like scapula is very rare. We present a case of a 56-year-old woman with painless swelling in the right lower back of chest. Ultrasonography suggested abscess formation. A chest X-ray and CT scan suggested coexisting pulmonary tuberculosis. CT revealed abscess with osteomyelitis of inferior angle of scapula. The abscess was aspirated and histopathological examination confirmed tubercular pathology. A 6-month course of antitubercular treatment resulted in complete resolution of symptoms.

BACKGROUND

Tuberculosis (TB) is still a very common cause of morbidity and mortality from infectious diseases, especially in areas that are endemic to TB. Pulmonary TB is the most common manifestation; however, cases of extrapulmonary TB are on the rise because of increasing incidence of multidrug resistance. Intestinal and genitourinary TB constitutes a major part of extrapulmonary TB leaving rest to share among other body systems. Involvement of spine is the commonest manifestation of musculoskeletal TB followed by joints and long bones. Flat bones are rarely involved and only few instances can be traced in available literature mentioning the involvement of scapula as only 18 cases have been reported so far.

CASE PRESENTATION

A 56-year-old woman presented with a gradually increasing swelling over back of the right lower chest for 3 months. The swelling was not associated with pain. There was no history of fever, weight

loss and cough. Neither she nor her family members had suffered from TB in the past. There was no history of any comorbidity except that she had undergone cholecystectomy 10 years ago. On examination, solitary, non-fluctuant, non-tender, firm swelling of about 10×10 cm was seen in the right lower posterolateral chest wall. There were no signs of active inflammation over the swelling. Overlying skin was normal. There was no restriction of movements across the shoulder joint.

INVESTIGATIONS

A complete blood count revealed normal haemoglobin, total and differential leucocyte count, and platelet count. However, erythrocyte sedimentation rate (ESR) was significantly high and showed 66 mm fall in the first hour. Mantoux test was positive showing induration of 12 mm in maximum diameter at the end of 48 h. Two consecutive samples of sputum were negative for *Mycobacterium tuberculosis*. Ultrasound scan of the swelling showed a heterogeneous collection measuring 4.4×3.7 cm surrounded by a thick irregular wall in the right posterolateral chest wall with evidence of few loose bony fragments and underlying bone destruction (figure 1A,B). A CT scan of the thorax revealed lytic destruction of inferior angle of scapula with few bony fragments with adjacent peripheral rim enhancing the lesion measuring 7.3 cm×7 cm×4 cm involving the right serratus anterior and latissimus dorsi muscles suggesting scapular osteomyelitis with adjacent abscess formation (figure 2A,B). Lung parenchyma showed evidence of collapse and consolidation in the anterior segment of the left upper lobe with bronchiectatic changes (figure 3). However, no communication was noted between the scapular lesion and lung parenchyma or the pleural cavity. Abscess was aspirated and sent for cytological and bacteriological evaluation. The cytology revealed plenty of degenerated inflammatory cells and macrophages in a necrotic background. Acid-fast bacilli were seen

Figure 1 Ultrasound scan showing bone destruction (A) and heterogeneous collection (B).

Figure 2 CT scan showing lytic destruction of the scapula with bone chips and adjacent collection (A and B).

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Figure 3 CT of the thorax showing collapse and consolidation of the upper lobe of the left lung.

with Ziehl-Neelsen stain (figure 4A,B). Cytological features were consistent with tubercular abscess.

DIFFERENTIAL DIAGNOSIS

The first diagnosis that strikes the mind in a case of painless swelling over the chest wall in an elderly patient is a chest wall tumour. These can be benign or malignant. Malignant lesions tend to grow faster and manifest as a larger mass and with much more pain.¹

Osteochondromas are the most common tumours and can arise from costochondral junction of the ribs and scapula. They constitute almost 50% of the chest wall tumours.^{1 2} Condromas are other chest wall tumours but are more commonly found anteriorly (as they usually involve the sternocostal junction). Usual age of presentation is relatively early, in around second or third decade.^{2 3}

Fibrous dysplasia commonly involves posterolateral portion of the ribs and can arise in the same location (as was the clinical presentation in this patient). Presentation is usually a slow growing mass leading to pathological fractures and therefore pain and a lytic lesion with a soap bubble or ground glass appearance on X-ray could be seen.^{2 3}

Other benign lesions that can present with similar clinical picture can be neurogenic tumours, desmoid tumours, lipomas, haemangiomas and eosinophilic granulomas.³⁻⁷

Malignancies involving the chest wall are equally as common as are the benign ones. Condrosarcomas are most common (30%) and are the result of malignant degeneration of benign chondromas. Scapular involvement is rare.⁸⁻¹⁰ Osteosarcomas and round cell tumours (Ewing sarcoma) can involve scapula and usually present as painful masses. Both of these have a bimodal age presentation and can affect young as well as elderly population.^{8 11}

Figure 4 Images showing degenerative inflammatory cells in a necrotic background (A) and acid-fast bacilli (B).

Other malignant swellings that can arise in similar locations are soft tissue tumours and include malignant fibrous histiocytomas, liposarcomas and neurofibrosarcoma.¹² Metastatic lesions are infrequent and the usual sites of primaries are in breast and lungs.¹²

TREATMENT

A diagnosis of pulmonary TB with tubercular osteomyelitis of the scapula with cold abscess was made. It was decided not to formally drain the abscess; rather we tried to aspirate as much pus as possible while doing a diagnostic aspiration. She was started on category III (new smear-negative pulmonary TB, new extrapulmonary TB, not seriously ill) antitubercular therapy (ATT) (2HRZ+4HR).

OUTCOME AND FOLLOW-UP

In subsequent follow-up visits the patient remained asymptomatic. The lung fields improved and the swelling which disappeared after aspiration did not show any further increase in size clinically as well as on ultrasound scan.

DISCUSSION

TB is an infectious disease caused by *M tuberculosis* bacilli and one-third of the world's population is infected with TB killing about two million people annually.¹³ TB mostly affects the lungs. Musculoskeletal TB constitutes around 10–35% cases of extrapulmonary TB and only 2% of all cases of TB.¹⁴ Spine is the most common site and seen in about half of these patients. Joint involvement (tubercular arthritis) is the second most common followed by long bone involvement.¹⁴ TB involving flat bones is rarely found.¹⁵ TB involving bones of the shoulder joint is very rare and constitutes less than 1% of all osteoarticular TB cases and only a fraction of it involves the scapula.¹⁶ Arthritis is more common than osteomyelitis in osteoarticular TB.¹⁷ Finding of cold abscess strongly suggests TB.¹⁸ Only 18 cases of scapular TB have been reported until now in the literature.^{15 16 19-31} Among them, three cases of scapular TB mention involvement of inferior angle of scapula.¹⁹⁻²¹ Coexistence of pulmonary TB is seen in one-third of patients with osteoarticular TB. Tubercular osteomyelitis presents usually with pain and swelling. ESR is elevated in almost all of these patients. Radiographic features are non-specific. Osteopenia, osteolytic foci and varying sclerosis are the common radiographic features. Cystic TB is a common form of osteoarticular TB. Few radiographic features that favour diagnosis of tubercular infection over neoplasia include presence of small juxtacortical abscesses, rings of inflammatory tissue due to cortical destruction and spread of infection to the extraosseous tissues.³² CT is preferred over plain X-rays in diagnosis as it clearly demarcates cortical destruction and associated juxtacortical abscess. Histopathology is required to establish definitive diagnosis, however, fine-needle aspiration cytology (FNAC) can also help in the diagnosis of TB of the bones and joints.³³ Masood³⁴ has reported that FNAC is a good alternative to open biopsy and showed granulomatous reaction in 73% of cases, bacteria in 64% of cases and positive culture in 83% of cases. Multifocal involvement is more common in children whereas solitary involvement is more common in adults.¹⁷ Delay in the correct diagnosis can happen due to uncommon location, low index of suspicion and ability to mimic other disorders.¹⁵ Primary treatment of osteoarticular TB is medical with ATT.¹⁸ Surgical interventions and drainage are used as adjuncts to antitubercular chemotherapy. Surgical intervention is required in patients with giant sequestra or where the response to ATT of 4–6 weeks is

not satisfactory.³⁵ Despite best possible efforts from various government and non-government organisations, the total number of cases as well as the number of cases involving the atypical sites are growing largely due to development of resistance against most of the first-line agents and its ability to develop opportunistic infection in patients with AIDS.

WHO in its new release of Definitions and Reporting Framework for Tuberculosis—2013 Revision has removed the category III and its treatment protocols and has grouped them along with category I patients. In India, this strategy has been endorsed by the Revised National Tuberculosis Control Programme (RNTCP). So now all the new cases (pulmonary or extrapulmonary, smear-positive or smear-negative seriously ill or not), defined as never been treated for TB or have taken ATT for less than 1 month, should be kept in category I and started on 2HRZE+4HR.³⁶

High degree of suspicion is required for early establishment of diagnosis of scapular TB. Cases of scapular TB are extremely rare. However, any swelling in the chest wall or scapular region should be suspected and evaluated for TB, especially in endemic areas.

Learning points

- In the absence of symptoms suggestive of pulmonary tuberculosis, the diagnosis of musculoskeletal tuberculosis is often delayed.
- In areas endemic to tuberculosis or HIV, tuberculosis must be kept as a differential diagnosis while evaluating any organ system as tuberculosis can involve and affect each and every organ.
- Extended course of antitubercular therapy is usually not required, especially if the patient is not seriously ill. WHO recommends same regimen for both pulmonary and extrapulmonary tuberculosis in its recent guidelines (2013).

Contributors The patient was under the treatment of KN and VKS. BKS did the radiodiagnostic workup. DD performed the histopathology. All the authors contributed equally in drafting the final version of the manuscript.

Competing interests None.

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