CASE REPORT

Abdominal pain and swelling as an initial presentation of spinal tuberculosis

Akram Y Elgendy,¹ Ahmed Mahmoud,² Islam Y Elgendy²¹Department of Medicine, Hamad Medical Corporation, Doha, Qatar²Department of Medicine, University of Florida College of Medicine, Gainesville, Florida, USA

Correspondence to

Dr Islam Y Elgendy, islam.elgendy@medicine.ufl.edu

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SUMMARY

Spinal tuberculosis (Pott's disease) is one of the common extra-pulmonary presentations of tuberculosis. Spinal tuberculosis commonly presents with back pain, fever and night sweats. In this report, we present a case of spinal tuberculosis complicated by bilateral large psoas abscesses. The patient presented with bilateral flank pain and swellings rather than the classic presentation of back pain. The aim of this report is to draw the attention of physicians to this uncommon presentation of spinal tuberculosis, as an early recognition of such condition may expedite diagnosis and treatment, thereby preventing future complications of the disease.

BACKGROUND

Tuberculosis (TB) of the skeleton is a condition that is affecting human beings since prehistoric times, as suggested by studies that showed amplified *Mycobacterium tuberculosis* DNA samples from ancient skeletons.¹ Although it is an ancient disease and despite the enhancements in the available therapy modalities, it remains a huge medical and financial burden especially in the developing countries.² In developing countries, skeletal TB may reach up to 10% of the total TB cases and about 50% of these cases have spinal involvement.³ Even in developed countries, this disease continues to be an issue; in the 2013 Annual TB surveillance report in the UK, the number of spinal TB cases was 394 (4.5% of the total cases of TB).⁴ Spinal TB commonly presents with back pain, fever and night sweats; however, abdominal pain and swelling are considered rare presentations of this disease.⁵

CASE PRESENTATION

A 27-year-old healthy Asian man with no history of medical illnesses presented to the emergency department (ED) with right-sided flank pain that started about 3 months ago; the pain was continuous, dull in nature and progressive in course. He had also noticed that there had been a gradually progressive swelling in both flank areas. This was associated with loss of appetite, low-grade subjective fever, sweating and generalised fatigability. He did not report any nausea, vomiting or change in his bowel habits. He denied any history of cough or expectoration. He had neither focal weakness nor sensory loss. He also denied any similar attacks in the past, exposure to any sick contacts or prior exposure to a patient with TB. Of mention, he presented to the ED on several occasions with the same problem during the past 3 months. He was diagnosed with

gastritis and discharged home with over-the-counter antacids.

On physical examination, the patient appeared toxic and in distress, secondary to the abdominal pain. He had a low-grade fever of 37.7°C. His blood pressure and pulse rate were normal. Abdominal examination was remarkable for bilateral tender abdominal masses; both were tense and non-fluctuant. The first mass was in the right flank region (figure 1), approximately 14×10 cm in diameter. The second mass was in the left flank region, approximately 8×5 cm in diameter. There was no guarding, rigidity or rebound tenderness. Straight leg raising sign in both legs was negative. Full neurological examination was normal. Spinal examination revealed tenderness on all thoracic vertebrae with limited range of motion.

INVESTIGATIONS

Initial laboratory investigations were relevant for leucocytosis of 13 700/mm³ (4000–10 000/mm³) with polymorphic neutrophils predominance (89%), haemoglobin of 11.1 g/dL (14–17 g/dL), platelets of 461 000/mm³ (150 000–350 000/mm³) and ESR of 45 mm/h (0–15 mm/h). Blood, urine and sputum bacterial cultures did not show any bacterial growth; acid-fast stain for the same samples did not show any acid-fast bacilli; also the ELISA test for HIV was negative.

A chest X-ray revealed normal lung parenchyma. An abdominal ultrasound detected the presence of bilateral cystic flank lesions (measuring 33×10 cm on the right side and 21×9 cm on the left side) extending down to both iliac fossae. A CT scan of the abdomen, with intravenous contrast, showed

Figure 1 Picture of the anterior abdominal wall showing a right-sided abdominal swelling (arrow).

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multiple osteolytic lesions, with areas of sclerosis in T4–T12 vertebral bodies, bilateral prevertebral and paravertebral abscesses (15×40 mm to 25×60 mm) at different levels of T4–T12. The CT scan also showed a right psoas abscess (26×11×9 cm) extending down to the right groin and a left psoas abscess (23×10×9 cm). There was a prevertebral abscess in the lumbar region (1.5×3.8 cm) and a presacral loculated pocket of size 3.9×4.5 cm with focal lesions in L2–L4 vertebrae. There was no evidence of free fluid in the peritoneum (figure 2).

An ultrasound-guided diagnostic aspiration of one of the cystic lesions was performed; it showed profuse polymorphs, with no bacterial or fungal growth. The acid-fast stain was positive for acid-fast bacilli. A CT-guided therapeutic drainage of both psoas abscesses was performed with drainage of 1.7 L of serosanguineous fluid. Later on, cultures of the fluid grew *M tuberculosis* bacteria, which were sensitive to isoniazid and rifampicin (the only antibiotics that sensitivities were tested for). Since the patient denied any neurological deficits in his lower extremities, along with the absence of any neurological findings on examination, there were no concerns for possible spinal cord compression, and thus we did not seek an MRI of the spine.

DIFFERENTIAL DIAGNOSIS

The differential diagnoses in this case involve causes of unilateral or bilateral psoas abscesses; this includes either primary psoas abscess, which is most commonly secondary to *Staphylococcus aureus* infection, or secondary psoas abscess, which can be secondary to diverticulitis, spinal TB 'as in our case', spinal bacterial osteomyelitis, Crohn's disease or septic arthritis. Other causes of retroperitoneal swelling include perinephric abscess, tumours of psoas muscle and haematomas.

TREATMENT

Accordingly, the patient was started on quadruple anti-tuberculosis therapy (rifampicin, isoniazide, pyrazinamide and ethambutol), with a marked improvement of his general condition. The plan was to continue the quadruple therapy for a total of 2 months, then to switch to dual therapy, including rifampicin and isoniazide, for additional 4 months. Steroid therapy was not initiated and surgery was not considered at that point, since there were no concerns for any spinal cord involvement clinically and on the CT scan. Physical therapy was initiated while

being an inpatient, with plans to follow-up with physical therapy as an outpatient.

OUTCOME AND FOLLOW-UP

The patient was discharged home with quadruple anti-tuberculosis therapy. At a 3-week postdischarge follow-up appointment, the patient had a marked improvement of his flank pain; he also denied any side effects from the medications. He was scheduled for another follow-up appointment after 1 month.

DISCUSSION

Tuberculosis is caused by *M tuberculosis* which is a fairly large, non-motile, rod-shaped bacterium.⁶ TB of the spine is one of the frequent extrapulmonary manifestations of tuberculosis infection.³ It was first described by Sir Percivall Pott in 1782.⁷ Spinal TB commonly occurs in the first three decades of life; however, it has been reported in the elder population in developed countries.⁵

The disease usually arises from arterial haematogenous seeding from a quiescent pulmonary focus.² The disease pathogenesis differs from one age population to another. In children, an arterial anastomosis still exists between the vertebral endplate and the disc; hence the discs are commonly involved, which is labelled as discitis.² On the other hand, in adults, the intervertebral discs are no longer vascularised, so the infection starts in the anterior portion of the vertebral body, which is the most vascularised part, thus sparing the discs in most of the cases.² Contagious spread from the adjacent lymph nodes, for example, para-aortic lymph nodes, is considered another route of infection.⁸

In general, TB osteomyelitis has an indolent and less painful evolution than pyogenic infections. The latency period varies between 1 week and 3 years. One of the common complications is the formation of large paravertebral abscesses. Such abscesses may be found away from the infectious focus in the psoas muscle sheaths or in the posterior abdominal muscles and may drain spontaneously in the iliac area.²

Clinical features of TB of the spine include back pain (up to 80% of cases), fever, loss of appetite, loss of weight and night sweats. Local pain, swelling and limitation of joint movement may precede discernible radiological changes by 4–8 weeks, and pain is usually localised to the affected joints.⁵ Our case demonstrated constitutional manifestations (fever, fatigue and decreased appetite); however, the patient presented with flank pain, arising from the tense psoas abscesses, rather than the classic back pain of spinal TB. Although the disease was advanced, as evidenced by the CT scan findings, the patient's clinical picture appeared much more benign than the actual disease progression.

Management of such cases requires rapid diagnosis and prompt treatment. Diagnosis is usually established with radiological identification of the infective focus, either by CT scan or MRI. In a systematic review study conducted by Fuentes-Ferrer *et al*,⁵ CT scan and MRI showed positive results in 100% of patients evaluated. Diagnosis can be confirmed with by ultrasound or CT-guided aspiration and sending the sample for acid-fast staining and TB culture.⁴ In a meta-analysis by Merino *et al*,⁹ the sensitivity of TB culture and acid-fast staining in spinal TB were 59.3% and 45.2%, respectively.

The American Thoracic Society and the Centers for Disease Control and Prevention recommend 6–9 months duration of therapy for adults: the initial quadruple therapy (isoniazid, rifampicin, pyrazinamide and ethambutol) for 2 months followed by isoniazid and rifampicin for the following 4–7 months.¹⁰ The National Institute for Health and Care

Figure 2 (A) CT scan of the abdomen (coronal view) at the level of lumbar vertebrae, showing the right (red arrow) and left (black arrow) psoas abscesses. (B) CT scan of the abdomen and vertebral column (sagittal view) showing multiple osteolytic lesions extending from T4 to T12 (arrows).

Excellence guidelines recommend a total of 6 months of therapy.¹¹ Steroid therapy is warranted in cases of spinal TB with arachnoiditis and intraductal tuberculomas.¹² Prolonged rest and brace immobilisation are controversial in the management of spinal TB.⁴ There is a controversy in the literature about the necessity of additional surgical intervention to spinal TB treatments; a Cochrane review by Jutte *et al*,¹³ comparing chemotherapy plus surgery with chemotherapy alone for treating active TB of the spine, showed that routine surgery is not recommended.

Learning points

- ▶ Spinal tuberculosis (TB) (Pott's disease) is a common extra-pulmonary presentation of tuberculosis.
- ▶ Spinal TB, in most cases, has an indolent presentation.
- ▶ Spinal TB commonly presents with back pain and tenderness along with constitutional symptoms, for example, low-grade fever. Abdominal pain and swelling are a rare presentation of spinal TB.
- ▶ Patients with spinal tuberculosis require treatment with anti-tuberculous medications for 6–9 months.
- ▶ Surgery is not routinely recommended for the treatment of spinal TB.

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Competing interests None.

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