

Musculoskeletal tuberculosis with multifocal muscle abscesses in a healthy young adult

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Abstract

Musculoskeletal tuberculosis represents 1% of total tuberculosis cases. It affects young adults from endemic countries or immunocompromised patients and may lead to severe functional impairment. We report a case of a 27-year-old male from an endemic country presenting with a 4-month history of fever, a major pectoralis abscess, and low back pain. A lumbar spine MRI revealed osteolytic lesions in multiple vertebral bodies along with a large iliopsoas abscess. Both abscesses were drained and the diagnosis was established by positive polymerase chain reaction assay for tuberculosis. The patient was initiated on anti-tuberculous treatment for 9 months. Musculoskeletal tuberculosis is rarely found in Western countries. If left untreated, it can lead to severe complications which may require surgical intervention.

Case Report

A previously healthy 27-year-old Pakistani man presented to the emergency department with a 4-month history of low-grade fever, night sweats, weight loss, and low back pain. At admission, his temperature was 38°C and his vital signs were normal. Clinical examination revealed a palpable painful swelling in his right anterior chest wall and a positive Lasègue's sign. Laboratory tests showed elevated levels of inflammatory markers (CRP 7 mg/dl, ESR 120 mm/h) and mild anemia (Ht 35%). Serologic investigation for virus- and auto-antibodies was negative. A chest computed tomography (CT) revealed an abscess at right major pectoralis, without evidence of pulmonary involvement (Figure 1). The abscess was drained under local anesthesia and the pus was sent for cultures, molecular, and cytological examination. A lumbar spine magnetic resonance imaging (MRI) was also performed to investigate the nerve root back pain, which demonstrated osteolytic lesions at multiple vertebral bodies (L3-S2), with paraspinal lesions extending into right iliopsoas muscle, forming an abscess (Figure 2). A CT-guided percutaneous drainage tube insertion (Figure 3) was performed, leading to removal of a total 200 ml pus over 3 days.

The Gram and Ziehl-Neelsen stains and the cultures for common pathogens in the pus were negative. However, a polymerase chain reaction assay for the detection of *Mycobacterium tuberculosis* (Xpert MTB-RIF) in both fluids came up positive and the patient was commenced on daily anti-tuberculous treatment (isoniazid, rifampicin, pyrazinamide, and ethambutol). The patient's fever declined and his sciatica improved. The pus culture confirmed the growth of *M. tuberculosis*, being fully sensitive to the above regimen. The patient received the 4-drug anti-tuberculous

treatment for the first 2 months; afterward, he continued with isoniazid and rifampicin for 7 more months.

Discussion

The spine is the most frequent site of musculoskeletal tuberculosis (50%), usually following an extraspinal source of infection. Hematogenous or lymphatogenous spread occurring via arteries, veins (venous plexus of Batson), and lymph nodes may cause the involvement of the spine. Spinal tuberculosis, also known as Pott's disease, typically affects multiple vertebrae, with lower thoracic and lumbar as the most common. It can also involve intervertebral disks or the spinal cord causing further neurologic complications. Chest wall tuberculosis is much rarer and may involve the sternum and ribs, with the development of abscesses being more common [1].

Spinal tuberculosis affecting the lumbar region usually presents with low back pain and signs of kyphosis or localized swelling. The granulomatous tissue can spread to adjacent tissue (joints, muscles) and form abscesses. These abscesses are classified either as primary or secondary. Tubercular iliopsoas abscesses are typically secondary to a lumbar spinal infection [2], as in this case. MRI provides better accuracy in the imaging of the disease's extent at soft tissues, as well as neural compression. CT-guided aspiration of the abscesses is recommended as part of both treatment and diagnosis at the same time [3].

Spinal tuberculosis may lead to severe neurological impairment like paraplegia or quadriplegia if left untreated. This is particularly true in cases where the cervical or upper thoracic spine is involved. Surgical indications include spinal deformities, no response to anti-tuberculous treatment, major neurological deficiency, large paraspinal abscesses, or abscesses increasing in size despite therapy [4]. In this case, surgical intervention was dismissed because no spinal cord compression or intervertebral disk destruction was revealed in the MRI. Additionally, no neurological deficiency or spinal deformity was found during the clinical examination. The nerve root pain of the patient was attributed to iliopsoas abscess compressing lumbar plexus. After the drainage, the patient was relieved from the low back pain.

The current approach to the treatment of extrapulmonary tuberculosis by susceptible strains suggests a 6- to 9-month anti-tuberculosis treatment which is initiated by a 2-month phase of

chemotherapy with isoniazid, rifampicin, pyrazinamide, and ethambutol and continues with isoniazid and rifampicin. As for bone, joint, and spinal tuberculosis, some experts tend to favor the 9-month treatment regime because it is hard to assess the response to treatment as well as to perform bacteriologic evaluation, due to the site of the infection and the difficulty collecting new speci-

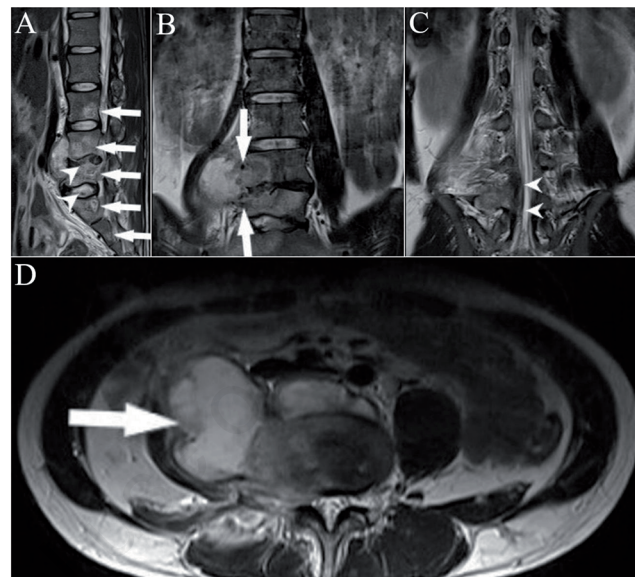


Figure 2. T2-weighted TSE magnetic resonance imaging of the lumbar spine: A) Sagittal view demonstrated osteolytic lesions in the bodies of the L3, L4, L5, S1, and S2 vertebrae (arrows), with evidence of bone edema and inhomogeneous contrast enhancement, and infiltration of the intervertebral disc at the levels L4-L5 and L5-S1 (arrowheads). B, C) Coronal view demonstrated extension of the lesions on the right anterior surface of the spinal sac at the levels L4-L5 and L5-S1 (arrows), with infiltration of the descending right L5 and S1 nerve root (arrowheads). D) Axial view demonstrated a large right paravertebral abscess of the iliopsoas muscle (arrow) with inhomogeneous, mainly peripheral, contrast enhancement and size 8.5x4.3 cm, extending to the right nerve foramen at the level L4-L5 with intense narrowing and pressure phenomena on the outgoing right L4 nerve root.

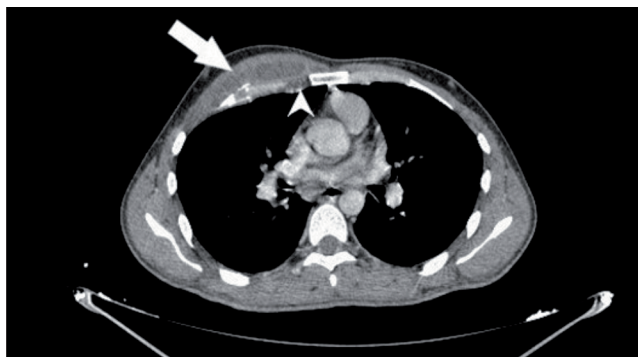


Figure 1. Chest computed tomography axial view revealed a spindle-shaped cystic lesion of 2.7 cm maximum diameter at the right major pectoralis muscle (arrow), with septae and intercostal extension causing pleural thickening and erosion of the 3rd sternocostal joint (arrowhead).



Figure 3. Computed tomography-guided percutaneous drainage tube insertion in the paraspinal abscess (arrowhead).

mens. The duration of treatment tends to be extended up to 12 months in cases with extensive orthopedic hardware. Furthermore, for spinal tuberculosis with evidence of meningitis, the suggestive duration of treatment is also 12 months, including consideration of adjunctive corticosteroids [5]. However, the optimal length of anti-tuberculous treatment for bone, joint, and spinal tuberculosis is open for debate since various published cases demonstrate successful short-course (6 months) treatment that leads to better patient compliance, decreased cost, and fewer side effects of the medications [6].

Conclusions

We presented a case of isolated musculoskeletal tuberculosis involving two distant areas, *i.e.*, chest wall and lumbar spine. Musculoskeletal tuberculosis is rarely found in Western countries and its diagnosis is still a challenge. It should always be included in the differential diagnosis of bone lesions with adjacent muscle abscesses, especially in young adults from endemic countries or immunocompromised patients.

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