



A CASE REPORT ON POTT'S SPINE (SPINAL TUBERCULOSIS) WITH PULMONARY TUBERCULAR INFECTION IN AN ADOLESCENT FEMALE

Respiratory Medicine

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ABSTRACT

A serious type of extrapulmonary tuberculosis, which is Pott's spine (tuberculous spondylodiscitis), may cause deformity, neurologic damage and vertebral breakdown in its untreated state. In this report, we present a case of a 16-year-old female with chronic back pain and low-grade symptoms, which developed into a diagnosis of lumbar spinal tuberculosis that also included a paravertebral abscess and at the same time had pulmonary tuberculosis. Radiology reports showed vertebral body collapse at L2-L4 with epidural spread, while the HRCT chest scan reported cavitary pulmonary lesions that indicated active tuberculosis. The patient responded to supportive care and early Anti-Tubercular Therapy (ATT).

KEYWORDS

Pott's Spine, Spinal Tuberculosis, Tuberculous Spondylodiscitis, Paravertebral Abscess, Pulmonary Tuberculosis.

INTRODUCTION

Pott's spine is the term used for severe extrapulmonary tuberculosis leading to deformity, neurological deficit and structural destruction of the spine. Tuberculosis (TB) is a major public health problem in many developing countries. Extrapulmonary bone TB accounts for 10% to 15% of cases of extrapulmonary TB. The most common form of extrapulmonary spinal TB is TB of the spine (Pott's disease) and is caused by *Mycobacterium tuberculosis*.^{1,4,6}

Usually, it hits the middle and lower back, potentially damaging the bones, causing a hunchback, nerve problems, and abscesses near the spine.^{6,7}

Getting an early diagnosis through MRI scans and lab tests is super important for avoiding problems.^{1,6}

Case Presentation

We report a case of a 16-year-old female, a spin which is also single, with no history of blood pressure issues, diabetes, smoking or left-handedness. She had been doing well till 6 months ago, when she reported back pain, which gradually, over a period of 20 days, was joined by pain in both legs. Also, at that time, a 6-month history of chronic cough presented. At a point a month before she came in for us to see, she had been well, but suddenly developed a dull ache in the lower back. That pain began to progress in severity, especially with movement and positioning; in short, she was unable to sit, stand, or walk. Also, she lost her appetite, lost some weight, and generally felt weak. Also of note is that they did not report any injury. When at the doctor's, it was found that she may have TB in the lungs. Also, she reported poor appetite, weight loss, and general fatigue.⁷ No history of trauma. Also, she didn't have a past of long-term illness, exposure to TB or prior hospital stays. Her menstrual cycles were regular. Also, she wasn't into drugs and didn't have any known drug allergies.

Clinical Findings

General Examination:

- Undernourished and pale
- Pulse: ~90–96/min
- Afebrile
- Pallor present

Spine Examination

- Lumbo-sacral tenderness

- Restricted spinal movements
- Early kyphotic deformity

Neurological Examination:

- Higher mental functions intact
- Motor and sensory functions normal
- No bowel or bladder involvement

Investigations

Laboratory Findings:

- Haemoglobin: 6.7 g/dL (severe anaemia)
- Total leukocyte count: elevated
- CRP: 84.11 mg/L

Radiological Findings:

MRI Lumbo-sacral Spine:

- Vertebral destruction at L2–L4
- Epidural & paravertebral collections
- Thecal sac compression
- Canal stenosis
- Suggestive of tuberculous spondylodiscitis.

X-ray Spine:

- Anterior wedging of L3–L4 vertebrae.
- Pott's spine



HRCT Chest:

- Bilateral cavitary lesions and nodular opacities
- Active pulmonary TB

Chest X-ray:

- Patchy nodular opacities suggestive of infective etiology

Clinical Diagnosis:

- Tubercular spondylodiscitis (Pott's spine) involving L2–L4
- Epidural and paravertebral abscess
- Active pulmonary tuberculosis
- Severe anaemia with malnutrition.

Management:**Goal Setting:**

- Treat primary infection
- Prevent neurological complications
- Improve nutritional status
- Restore functional mobility
- Plan long-term rehabilitation.

Drug Management:

Anti-tubercular therapy (ATT) initiated as per national guidelines:

- Intensive phase: HRZE regimen
- Continuation phase: HR regimen

Supportive therapy included:

- Iron supplementation
- Nutritional support
- Analgesics
- Proton pump inhibitor

Follow-up

According to the hospital record, the patient was suffering from back pain, a hunched back and lower back tenderness at the time she presented at the hospital counter to collect her medication. The neurological examination was, however, normal, and the patient could move all their extremities. He was managed conservatively without the need for an operation. Doctors from Paediatrics, Orthopaedics and Radiology departments, and the Physiotherapist all had a chat with him.

He was put on Anti-tuberculosis treatment (ATT) as per the National TB Treatment guidelines. He was also given fluids, injectables, analgesics, food and kept strictly on bed rest. His records indicated gradual improvement, fewer pains and a return to normal.

Physiotherapy was introduced once the patient stabilised. Rehabilitation included:

- chest physiotherapy and diaphragmatic breathing exercises
- thoracic expansion and pulmonary hygiene techniques
- limb strengthening and assisted range-of-motion exercises
- postural correction and mobility training

The patient was advised to have regular follow-up with:

- Clinical monitoring
- Haematological and inflammatory markers
- Radiological reassessment.

The interventions were chosen based on the specific needs of the population (pulmonary involvement, at risk of deconditioning). The follow-up physiotherapy reviews have highlighted improvements in respiratory function as well as an increase in activity levels and muscular strength.

DISCUSSION

Tuberculosis in the spine, also called Pott's spine, is the most common type of Tuberculosis that affects the bones. It makes up about half of all Tuberculosis cases in the muscles and bones. It happens when *Mycobacterium tuberculosis* spreads through the blood from somewhere else in the body, usually the lungs. Children and adolescents can get it easily because their spine bones have many blood vessels, which make it easier for the bacteria to settle there. This case shows a typical example of Tuberculosis in the spine along with Tuberculosis in the lungs in an adolescent female. It's important to diagnose it early and have a team of doctors working together to treat it.⁹

The patient reported chronic back pain, which also caused them to have difficulty in sitting and standing for some time, and they had developed

a fever, had lost weight and appetite. What we see is an insidious onset, which is typical of spinal tuberculosis and which also tends to cause delay in diagnosis. In paediatrics, symptoms may be very subtle and nerve problems may present later, so doctors must pay close attention. MRI is still the best tool not only to identify but also to follow up on spinal tuberculosis.

In this instance, the MRI scans showed spondylodiscitis at L2–L3, with the vertebrae damaged and collapsed. There was also ventral epidural spread and collections on either side of the spine, which in addition had psoas abscesses. We found that to be consistent with a diagnosis of tuberculous spondylodiscitis. Also, we looked at the radiological differential diagnosis of a pyogenic infection, but in the end, a number of the reports pointed to an infective cause of the tuberculous spondylodiscitis. A repeat X-ray confirmed wedging at the anterior aspect of L3 & L4 vertebral bodies, and hence a diagnosis of Pott's spine was confirmed.

The HRCT scan of the chest revealed lung abnormalities, which include: Lung lesions with cavitation, Tree-in-bud opacities, Nodular infiltrates in both lungs, which suggest an active case of Tuberculosis. If the patient has lung TB, it can affect the spine through blood circulation. So, it is very important to check if the TB has spread to any other part of the body.

These results confirmed anaemia and an acute phase response suggestive of active disease. The Mantoux test was also positive, which further supported the diagnosis. The raised ESR and CRP values correlate with disease activity and are therefore a useful marker in assessing the success of the treatment.

Early initiation of anti-tubercular therapy (ATT) is important, but in this case, the patient was given the medicine and general care along with more food and pain relievers. When the patient felt a bit better, we then started doing physical therapy, including deep and breadth chest exercises as well as limb strengthening exercises to prevent complications from TB that cause shortness of breath and also to prevent atelectasis or muscle wasting.

After a follow-up, the patient felt a huge improvement in their health. He experienced significantly less pain, was able to move around more easily, and reported a stable nervous system. "Physiotherapy helped me return to normal activities," he noted. As stated earlier, the physician indicated that the patient's response to conventional treatment is in line with expected clinical behaviour. You should take your medicine before you have surgery because surgery is usually recommended for people who have bad nerve damage, a spine that is not stable or a big deformity or if the medicine is not working as it should.

This case highlights the importance of timely investigation of any spinal problem occurring in a teenager with long-standing history of low back pain and other systemic features such as evening rise of temperature and weight loss, occurring in a hyperendemic TB population. The diagnosis of lung TB does not end the investigation of TB elsewhere, and therefore other investigations have to be done to assess the possibility of TB elsewhere in the body especially extrapulmonary TB which includes spinal TB. Untreated spinal TB can lead to severe morbidity and therefore it is crucial that the diagnosis is made early in any teenager with long-standing low back pain and other systemic features especially occurring in a hyperendemic TB population. MRI was crucial in making early diagnosis of spinal TB and also in assessing any potential future complications. Early initiation of Anti-Tubercular Therapy (ATT) along with structured rehabilitation was crucial in achieving a good outcome and to avert any long-standing deformity.

This case emphasises:

- Importance of early detection,
- Association between pulmonary and spinal tuberculosis,
- Role of multidisciplinary management,
- Importance of nutrition and rehabilitation.

CONCLUSION

In this case what we see is an adolescent female patient that had tuberculosis in her spine (Pott's spine) and also in her lungs at the same time, which also brings to light the issue of early diagnosis in patients who present with persistent back pain, pain in both legs and also a chronic cough. Radiology played a key role in this case. We saw via an

MRI of the lower back that there was an infection in the vertebrae and discs, with damage and buildup of fluid that is characteristic of Pott's spine. Also, a CT of the chest showed cavities and what we term the tell-tale tree-in-the-sky pattern, which is very specific for active tuberculosis in the lungs.

When that adolescent girl first presented to the hospital with her parents it was noted that she had a sore lower back, was humpbacked, and had difficulty in sitting and standing. We immediately put her on ATT, gave her the best medical care we could, and saw to it that she ate well. Slowly, she began to improve. A team of our doctors which included pediatricians, orthopedists, clinical pharmacists, radiologists, and physiotherapists closely monitored her progress and adjusted her treatment as required.

Physiotherapeutic interventions which included chest physiotherapy, diaphragmatic breathing, thoracic expansion exercises, and assisted limb mobilization reported to greatly improve respiration and function. We noted reduction in pain, improvement of respiratory function, enhanced mobility, and stabilization of neurological status in the follow up. The patient improved daily with simple treatment which in turn gave us that he did not require surgery. We identified the issue early and treated it which in turn prevented the spine from bending out of shape and causing nerve damage. This case reports the importance of high clinical suspicion of spinal tuberculosis in adolescents with chronic back pain in tuberculous areas. Early identification of the issue, treatment with appropriate ATT, and a structured rehab program are key to good results and to also to prevent long term disability.

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Patient Consent

The authors confirm they've got the thumbs-up from patients to share their information. The patients agreed that their images and clinical information can be used in this journal. We won't publish their names or initials and will try our best to keep their identity private, but we can't promise complete anonymity.

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