

Spinal Tuberculosis in Pregnancy: A Case Series

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ABSTRACT

Spinal Tuberculosis (Pott's Spine) infection during pregnancy poses significant challenges in early diagnosis, as it often resembles typical back pain experienced during pregnancy. Delayed diagnosis has resulted in maternal and foetal complications, including paraplegia, premature labor, preterm delivery, and foetal growth restriction. Treatment approaches are tailored to individual clinical presentations and may involve conservative or surgical intervention. Surgical decompression should be considered when there is a neurological deficit that could complicate the delivery process. The standard Antituberculous Therapy (ATT) regimen for 12 months is an accepted treatment protocol according to the World Health Organisation (WHO) guidelines during the antenatal period. The present case series comprises four middle-aged pregnant women (two aged 19 years, one aged 21 years, and one aged 35 years, all primigravida) diagnosed with Pott's spine at various trimesters, exhibiting a range of clinical presentations from mild back pain to acute neurological deficits. One patient in the late trimester with a neurological deficit required surgical decompression, while the remaining patients were successfully managed with appropriate ATT.

Keywords: Antituberculous therapy, Paraplegia, Pott's spine

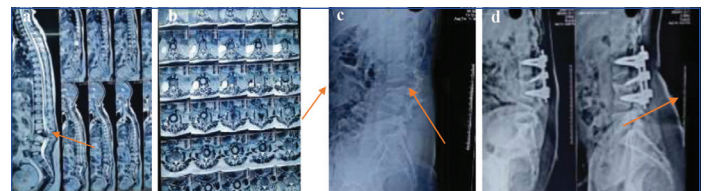
INTRODUCTION

Extrapulmonary Tuberculosis (TB) occurs in 10% of the population, with Pott's spine (TB spine) accounting for 2% of the cases [1]. TB spine in pregnancy can go undiagnosed for a long period until patients present with complications like neurological deficit [1]. The clinical presentation varies from simple vague back pain to the development of deformity and neurological deficit in advanced stages [2]. It poses an added risk to both the mother and foetus. Diagnosis is purely based on clinical suspicion, with Magnetic Resonance Imaging (MRI) being the investigation of choice, and tissue diagnosis is necessary to detect TB and resistance to rifampicin [3]. Surgical management in patients presenting with paraplegia has yielded good results [2,4]. Drugs in the standard ATT belong to category C and are accepted in the treatment protocol for TB in pregnancy [5]. The present case series of pregnant females with TB at various periods of gestation and their management.

Case 1

A 19-year-old primigravida female patient at 36 weeks and two days gestation presented to the Emergency Department with severe lower back pain and progressive weakness in both lower limbs. She was unable to walk upon presentation, and there was no bowel or bladder dysfunction. The patient had no significant past medical history. Upon examination, motor power in both lower limbs below L3 was quantified as 3/5 (MRC grade) [5]. Sensations were intact. Abdominal ultrasound revealed a psoas abscess and a live intrauterine foetus appropriate for the gestational age. X-ray and plain MRI of the patient's spine showed infective spondylodiscitis at the L3-L4 level, causing compression of the spinal cord [Table/Fig-1a-d]. An emergency caesarean section was performed, and a healthy baby was delivered. Three days after the caesarean delivery, the patient underwent posterior decompression, debridement, and fusion of the affected spine segments. The sample sent for Cartridge-based Nucleic Acid Amplification Test (CBNAAT) indicated the presence of mycobacterium tuberculosis that was not resistant to rifampicin. Pyogenic culture did not show any growth. A final diagnosis of TB spine with paraplegia was made, and the patient was initiated on a weight-adjusted dosage of the two-month intensive phase of

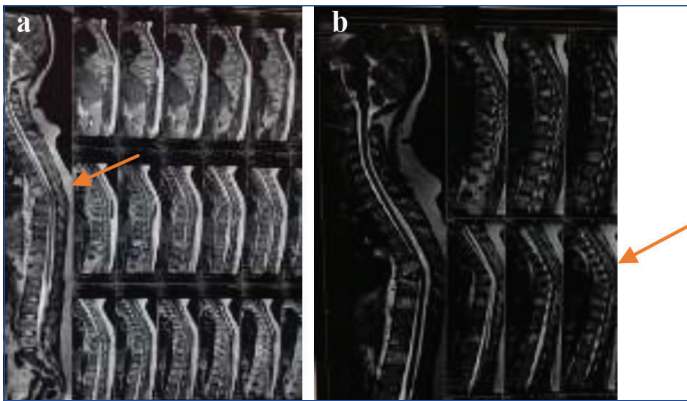
Antituberculous Therapy (ATT) (Rifampicin, Isoniazid, Pyrazinamide, Ethambutol), followed by a seven-month continuation phase of rifampicin and isoniazid. Treatment was discontinued based on clinical improvement, laboratory values, and radiological healing. The patient regained power in her lower limbs two weeks postsurgery and was able to walk independently. During the final follow-up after completing the ATT course, the X-ray showed a healed spine [Table/Fig-1a-d], and the patient was free from pain with no limitations in performing activities of daily living. She and her child have been under constant follow-up for the past three years.



[Table/Fig-1]: (a) Magnetic Resonance Imaging (MRI) showing destroyed L3 vertebra with infective spondylodiscitis; (b) Axial MRI showing paravertebral collection; (c) Presurgical X-ray showing kyphosis at L3 and L4; (d) Postsurgery two year follow-up showing complete fusion of L3-L4.

Case 2

A 19-year-old primigravida female patient in her first trimester was referred to the Orthopaedics Department with a history of mid-back pain for five weeks and bilateral leg pain. She was unable to sit without support, and the pain was affecting her daily activities. The patient had no significant past medical history. Upon examination, there was spinal tenderness at the D7-D8 level, along with a mild gibbus at D7, but no neurological deficit was observed. MRI findings were suggestive of D7-D8 infective spondylodiscitis with a paraspinal abscess [Table/Fig-2a,b]. The patient underwent a biopsy under fluoroscopic guidance, with a low dose of radiation and a lead shield for the abdomen. CBNAAT testing of the sample confirmed the presence of Mycobacterium tuberculosis, which was sensitive to rifampicin. A final diagnosis of TB spine with no neurological deficit was established. The patient completed a nine-month course of Antituberculous Therapy (ATT) with monthly follow-ups to monitor the progression of her pregnancy. She delivered a

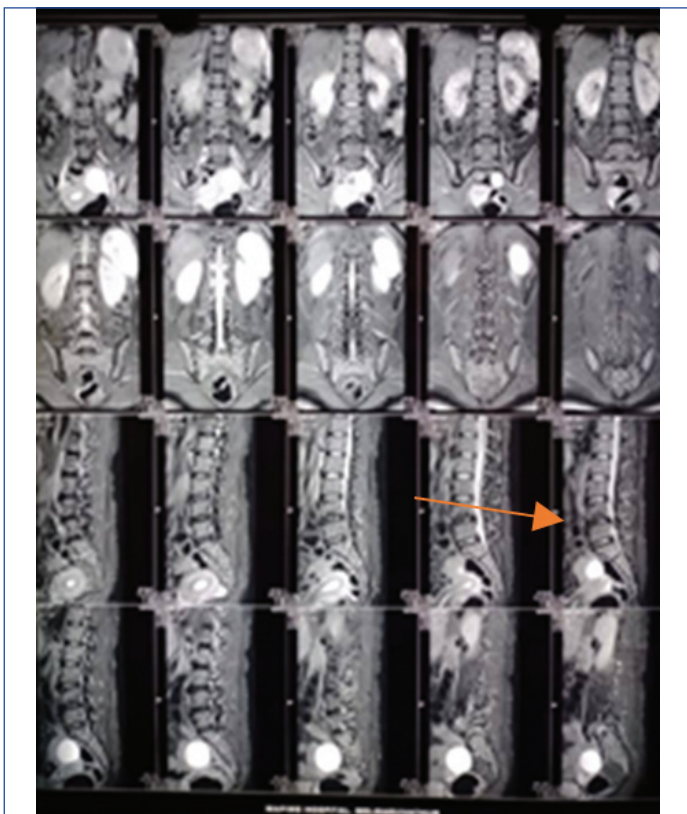


[Table/Fig-2]: (a) Active infective spondylodiscitis at D7-D8 vertebra; (b) Post-treatment at 10 months showed healing and resolution of abscess.

healthy baby at 37 weeks. Following the completion of ATT, she was clinically normal, and the MRI showed adequate healing of the vertebrae and resolution of the abscess.

Case 3

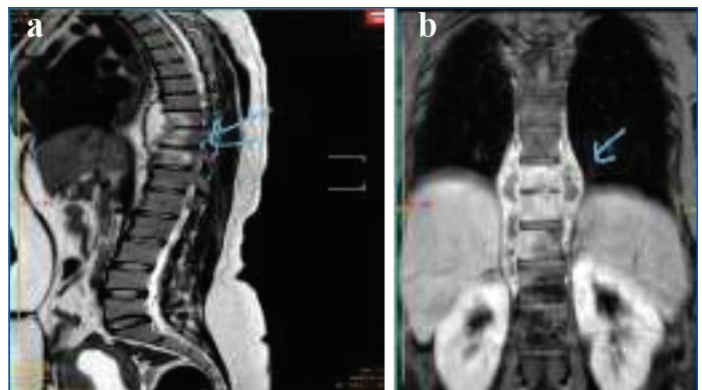
A 21-year-old primigravida female patient in her 2nd trimester presented to the Orthopaedics Department with low back pain that was affecting her daily activities for the past four weeks. Her past medical history was negative for any contact with a TB patient. Upon examination, tenderness was observed at the L4-L5 vertebrae, but there was no neurological deficit. MRI findings were suggestive of infective spondylodiscitis at the L4-L5 level [Table/Fig-3]. The patient underwent blood investigations for the infection, including a complete blood count, Erythrocyte Sedimentation Rate (ESR), C-reactive Protein (CRP), and blood culture. Her pyogenic infection profile tests came back negative. However, the sample was sent for CBNAAT, which yielded a positive result for TB. A working diagnosis of TB spine was made, and it was decided to empirically treat the patient with a weight-adjusted dosage of Antituberculous therapy for a total of nine months, based on clinical and radiological findings. The patient showed symptomatic improvement, and she delivered a baby at 38 weeks spontaneously. The postnatal period was uneventful.



[Table/Fig-3]: MRI images showing minimal destruction of L4-L5 disc space.

Case 4

A 35-year-old primigravida female patient at nine weeks of pregnancy presented with mid-back pain that had been persisting for the past four weeks. The pain had a gradual onset, was progressive, and was affecting her daily activities. Upon examination, tenderness was observed at the D8-D9 level, with no deformity or neurological deficits. The MRI findings indicated multifocal infective spondylodiscitis at the D9, D10, and D11 levels, along with a paravertebral abscess [Table/Fig-4a,b]. Additionally, minimal pleural effusion was noted. Ultrasound-guided aspiration of pleural tissue revealed caseating granulomatous inflammation suggestive of tuberculosis. The patient was initiated on a weight-adjusted dosage of Antituberculous Therapy (ATT) and continued the treatment for 10 months, following the World Health Organisation (WHO) protocol [2]. Regular monthly antenatal check-ups were uneventful, and she delivered a healthy baby at term.



[Table/Fig-4]: (a) MRI shows multifocal vertebral destruction and prevertebral abscess; (b) Coronal MRI showing large paravertebral abscess.

DISCUSSION

The present case series discusses four cases of TB spine and their respective MRI presentations. TB spine often presents with back pain, which can lead to a delay in diagnosis as it may be mistaken for pyogenic spondylitis or malignancy. Diagnosing TB spine in pregnancy can be challenging and requires a high level of suspicion [6-8]. Bothamley G et al., have discussed the factors contributing to the delay in diagnosing TB spine in pregnancy, and the authors of this study took these factors into consideration, resulting in a shorter time to initiate treatment [7]. The delay in diagnosis is often due to the presentation of back pain, which is commonly associated with pregnancy. The average time from presentation to diagnosis in present study was two weeks, consistent with other published literature such as Orazulike N et al., and Wolf B et al., [9-11]. A study by Shrivastava S et al., also reported foetal demise due to a delay in initiating ATT treatment in a pregnant patient in the second trimester [9-11].

Delayed diagnosis can lead to complications for both the mother and the growing foetus, as demonstrated by Sobhy S et al., in present case series. One patient presented with incomplete paraplegia, while the other patients did not experience any complications for both the mother and the foetus [2]. MRI without contrast is sufficient for diagnosing TB spondylitis and is safe during pregnancy [3]. Tissue diagnosis is necessary to confirm TB and assess its sensitivity to rifampicin, allowing for tailored ATT treatment [8]. In this series, patients presented at various stages of pregnancy with different clinical symptoms. Antitubercular drugs, following WHO guidelines, are considered safe in such cases [4, 12]. The WHO India guidelines for extra pulmonary TB recommend two months of intensive phase treatment and 10-16 months of continuation phase treatment [4]. Decompression surgery should be considered in cases of gross instability with neurological deficits [13].

Successful surgical management has been reported in previous cases involving pregnant females with a gravid uterus, ensuring the safety of both the mother and the foetus [14,15]. In the present case series, patients showed immediate improvement after decompression of the spinal cord, enabling better postnatal care for the mother and baby. Similar cases have been reported by Badve SA et al., describing three cases of successful surgical decompression for spinal TB followed by delivery [14-16]. Continuing ATT treatment during the postnatal period showed no adverse effects in breastfed babies.

CONCLUSION(S)

Back pain during pregnancy should not always be considered a normal occurrence. As demonstrated in present case study, early detection and treatment of spinal TB can lead to a favourable prognosis for both the mother and child. Surgical decompression followed by ATT should be considered in cases of significant instability and neurological deficits. ATT remains the primary treatment for all cases and has been proven to be safe during pregnancy in present study.

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