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Case Report

Tubercular paraplegia in pregnancy with complete neurological recovery following antitubercular therapy: a case report

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ABSTRACT

Spinal tuberculosis with paraplegia during pregnancy is rare and is a diagnostic and therapeutic challenge. Pregnancy, being a relatively immunocompromised state, may prompt rapid destruction of the vertebral body, resulting in an acute and profound neurological deficit. A 23-year-old G2P1L1 woman at 19+5 weeks presented with progressive bilateral lower-limb weakness; MRI showed D2 collapse with epidural collection and cord compression. Sputum Ziehl-Neelsen staining confirmed acid-fast bacilli, and first-line HRZE therapy was started. She recovered completely, continued pregnancy to term, and delivered a healthy male neonate by elective caesarean section. This case supports early MRI diagnosis and timely anti-tubercular therapy alone in selected patients with multidisciplinary care and close maternal-fetal monitoring can lead to complete recovery.

Keywords: Pott's spine, Spinal tuberculosis, Pregnancy, Paraplegia, Antitubercular therapy, Cord compression

INTRODUCTION

Tuberculosis remains a major public health problem in countries with a high background disease burden, and extrapulmonary tuberculosis continues to contribute substantially to delayed diagnosis and disability. Among extrapulmonary sites, spinal tuberculosis, classically known as Pott's spine, is clinically important because progressive vertebral body destruction can produce kyphosis, paravertebral or epidural abscess, spinal instability and neurological deficit. The thoracic and thoracolumbar spine are commonly affected, and early symptoms may be nonspecific, especially back pain, stiffness, low-grade fever, malaise or constitutional symptoms. The pathogenesis usually involves haematogenous seeding of the vertebral body, followed by paradiscal destruction, collapse, abscess formation and extension beneath the anterior longitudinal ligament. Once the epidural space is involved, cord compression may lead to paraparesis or paraplegia, making early recognition essential for neurological recovery.[1-3] Pregnancy makes this condition more difficult to recognise. Back pain is common during pregnancy and may be attributed to physiological postural and ligamentous changes, while fear of fetal radiation exposure may delay imaging. MRI is therefore central in suspected spinal cord compression because it provides detailed information on vertebral destruction, soft-tissue abscess and epidural extension without ionising radiation.

Maternal tuberculosis is also associated with adverse pregnancy outcomes when diagnosis or treatment is delayed, including fetal growth restriction, preterm birth, low birth weight, perinatal mortality and, rarely, congenital tuberculosis.[4,5] Spinal tuberculosis presenting with paraplegia in pregnancy is uncommon, and evidence is largely limited to case reports and small case series.

Management must balance maternal neurological urgency, spinal stability, gestational age, fetal safety and the expected response to antitubercular therapy. We report a rare case of second-trimester tubercular paraplegia with

extensive thoracic spinal involvement and complete neurological recovery following medical management, followed by successful term delivery.

CASE REPORT

A 23-year-old pregnant woman, gravida 2 para 1 living 1, at 19 weeks and 5 days of gestation, presented with sudden-onset progressive weakness of both lower limbs for 10 days. The weakness worsened gradually, and by the time of presentation she was unable to walk even with support. There was no history of bladder or bowel involvement. She was conscious, oriented and hemodynamically stable. Obstetric examination revealed a uterus corresponding to approximately 20 weeks, relaxed abdomen and positive fetal heart rate. Obstetric scan and basic antenatal investigations were within normal limits.

Neurological examination revealed reduced power and increased tone in both lower limbs, suggesting an upper motor neuron pattern of involvement. The upper limbs were not involved. In view of progressive neurological deficit during pregnancy, MRI brain with whole-spine screening was performed. MRI brain showed no significant abnormality (Figure 1B). MRI spine demonstrated collapse of the D2 vertebral body with gibbus deformity and a heterogeneous prevertebral/ epidural collection (Figure 1A and Figure 2B). The collection was noted at the D1-D2 level, extended anteriorly into the prevertebral space, and extended cranially up to the C5 vertebral level, measuring approximately 7.5×1.3 cm; the craniocervical screening view is shown in (Figure 2A). Posterior extension into the anterior epidural space caused spinal cord compression. Additional altered signal intensity was seen in the D6 and D7 vertebral bodies, with collection extending into the epidural space and causing anterior thecal sac indentation. A posterior wedge compression fracture of the D7 vertebra was also reported, and a hemangioma was noted at D8.

Ziehl-Neelsen staining of the sputum sample showed acid-fast bacilli. Based on the progressive spastic paraparesis, MRI findings of vertebral collapse with prevertebral and epidural collections, and microbiological evidence of tuberculosis, a diagnosis of Pott's spine with tubercular paraplegia in pregnancy was made. After multidisciplinary evaluation, she was started on first-line antitubercular therapy comprising isoniazid, rifampicin, pyrazinamide and ethambutol, along with multivitamin supplementation. Surgical decompression was kept as a contingency if neurological deterioration occurred or if she failed to improve on medical therapy. The patient showed progressive improvement after initiation of antitubercular therapy. Despite acute paraparesis at presentation, she regained full functional capacity with normal neurological function and was discharged in stable condition with advice to continue treatment and antenatal follow-up. She subsequently presented to the labour room at 38 weeks and 1 day of gestation with cephalic presentation and relaxed abdomen for confinement. Non-stress test was reactive. In view of previous lower-segment caesarean section and unwillingness for trial of labour after caesarean, elective lower-segment caesarean section was performed under spinal anaesthesia. A live male baby weighing 2.75 kg was delivered, with Apgar scores of 7 and 8. In view of previous lower-segment caesarean section and unwillingness for trial of labour after caesarean, elective lower-segment caesarean section was performed under spinal anaesthesia. A live male baby weighing 2.75 kg was delivered, with Apgar scores of 7 and 8.

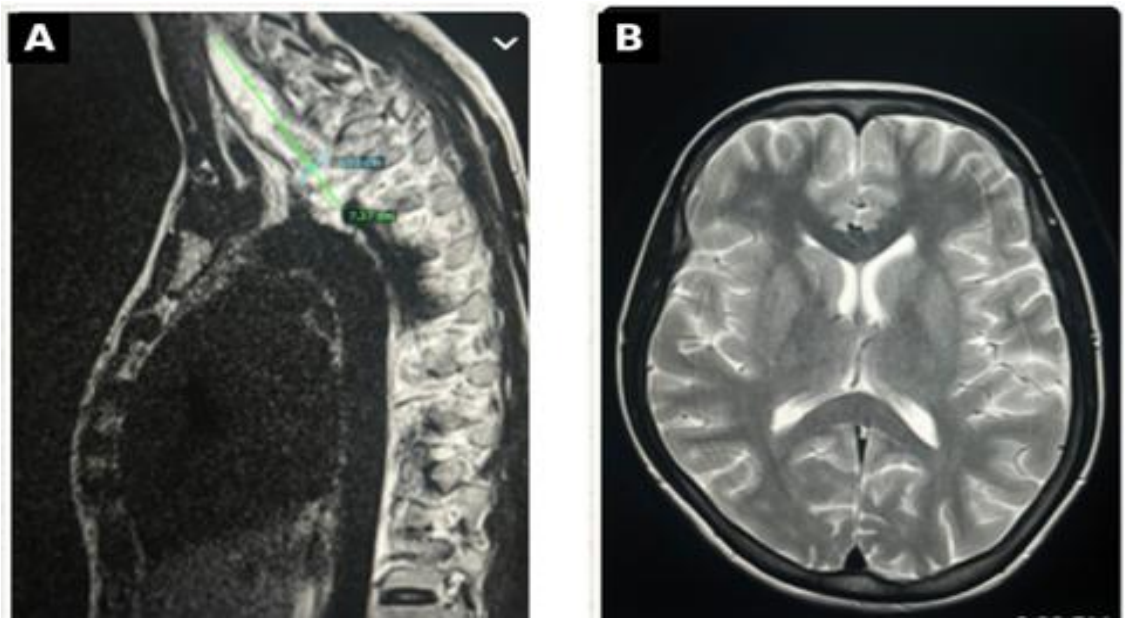

Figure 1: (A) Sagittal spine MRI showing collapse of the D2 vertebral body with gibbus deformity and measured prevertebral/epidural collection producing cord compression and (B) axial MRI brain image showing no significant intracranial abnormality.

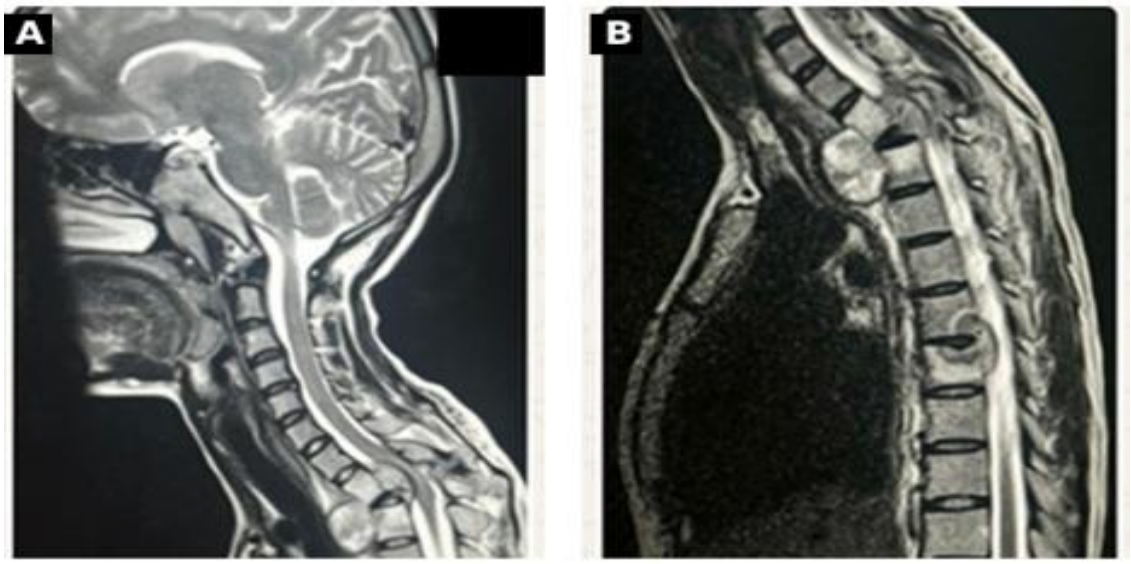

Figure 2: (A) Sagittal craniocervical MRI image showing cranial extension of disease and (B) sagittal cervicothoracic MRI image showing upper thoracic vertebral collapse with prevertebral and epidural collection causing anterior thecal sac indentation and cord compression.

Intraoperative findings included thin meconium-stained liquor and one loop of cord around the neck. The neonate was evaluated for congenital tuberculosis. Chest radiograph, gastric aspirate for acid-fast bacilli and abdominal ultrasonography for hepatosplenomegaly were normal. The baby was started on rifampicin prophylaxis for three months as advised by the neonatal team. The mother's postpartum period was uneventful, and she continued antitubercular therapy. She recovered without permanent deformity and was discharged in good condition.

This case illustrates that tubercular paraplegia in pregnancy, although rare, should be considered when a pregnant woman presents with progressive lower-limb weakness, increased tone, gait impairment or persistent back pain with neurological signs. The clinical lesson is particularly important in high-burden settings, where tuberculosis may coexist with pregnancy and where delays can occur because the initial symptom is often back pain rather than fever or pulmonary complaints. The major diagnostic challenge is that early spinal tuberculosis may mimic common pregnancy-related backache, while the neurological phase may resemble transverse myelitis, Guillain-Barré syndrome, spinal tumour, epidural abscess or metabolic neuropathy. In the present case, rapid MRI evaluation was decisive because it demonstrated D2 collapse, gibbus deformity, extensive prevertebral collection, epidural extension and cord compression. The positive sputum smear further supported tuberculosis and allowed timely initiation of treatment.

Comparison with earlier reports helps place this case in clinical context. Govender et al described four women with tuberculous paraplegia during pregnancy who delivered at term and subsequently underwent successful decompression for paraplegia.[6] That series highlighted the practical difficulty of spinal nursing and definitive spine treatment in the presence of a gravid uterus. In contrast, our patient presented in the second trimester, had preserved bladder and bowel function, and recovered fully with antitubercular therapy alone, avoiding antepartum spine surgery. Kaushal et al reported a woman presenting at 35 weeks with tubercular paraplegia who improved on antitubercular drugs without surgical intervention and delivered a healthy term infant by caesarean section.[7] Our case is similar in the favourable response to medical therapy, but differs by much earlier presentation and more prolonged need for coordinated antenatal follow-up.

The present outcome also differs from cases where surgery was necessary. Srivastava et al reported a 23-week pregnant woman with acute spastic paraplegia, complete motor and sensory deficit, and sphincter involvement due to T5 tuberculous spondylitis; she required decompression and instrumented fusion, regained neurological function, but had intrauterine fetal demise one month postoperatively.[8] This comparison underlines the importance of neurological severity. Sphincter involvement, complete deficit, mechanical instability, severe deformity or absent response to antitubercular therapy should prompt urgent surgical consideration. In such situations, delaying decompression merely because the patient is pregnant may expose the mother to irreversible neurological injury. Our patient had significant cord compression but retained bladder and bowel function and showed early clinical improvement, supporting a conservative approach under close observation.

Recent reports continue to support individualized management. Chandrasekaran et al described four

pregnant women with spinal tuberculosis; some were managed with medical therapy and one required caesarean delivery followed by posterior decompression and fusion.[9] Yadav et al reported acute-onset paraplegia due to spinal tuberculosis in term pregnancy, emphasizing that spinal tuberculosis should remain in the differential diagnosis of acute neurological deficit in pregnancy.[10] Mahdoom described conservative management of spinal tuberculosis in pregnancy with neurological sequelae, while Shaikh and Chouhan reported surgical decompression and stabilization at 26 weeks with continuation of pregnancy and later healthy delivery.[11,12] Together, these published cases show that treatment is not determined by pregnancy alone, but by neurological progression, spinal stability, site of disease, fetal maturity and availability of multidisciplinary care.

Antitubercular therapy is the cornerstone of treatment for drug-susceptible spinal tuberculosis. WHO recommends a rifampicin-containing first-line regimen for drug-susceptible tuberculosis, with HRZE in the intensive phase followed by isoniazid and rifampicin, while osteoarticular disease may require expert-led duration decisions.[13] CDC guidance advises individualized risk-benefit assessment for pyrazinamide in pregnancy, noting that it may be beneficial in extrapulmonary or severe tuberculosis and is routinely used in many countries; if pyrazinamide is excluded, at least nine months of isoniazid, rifampicin and ethambutol is generally used.[14] Pharmacokinetic and safety data indicate that first-line drugs are used during pregnancy, although monitoring for hepatotoxicity, adherence and pyridoxine supplementation with isoniazid remain important.[15] In this patient, HRZE therapy was associated with complete neurological recovery and no immediate maternal or neonatal complication.

Several factors likely contributed to the favourable outcome: early MRI-based diagnosis, microbiological evidence of tuberculosis, preserved sphincter function, prompt initiation of first-line therapy, absence of progressive deterioration after treatment, and coordinated obstetric and neonatal care. Preserved bladder and bowel function was especially reassuring because sphincter dysfunction often reflects more advanced cord compromise and is repeatedly used in published cases as a marker of severity. The decision to observe clinical response while keeping decompression as a contingency was therefore reasonable and avoided the anaesthetic, positioning and fetal concerns associated with antepartum spine surgery. Delivery route in spinal tuberculosis should be based primarily on obstetric indications; vaginal delivery is not automatically contraindicated, but caesarean section may be chosen for standard obstetric reasons or where neurological/spinal concerns affect labour management. In this case, elective caesarean section was performed because of previous caesarean section and unwillingness for trial of labour. Neonatal screening was appropriate because maternal tuberculosis can rarely be associated with congenital or neonatal tuberculosis, although all neonatal evaluations were normal.

This report has limitations. Histopathological confirmation from spinal tissue was not obtained, and follow-up imaging after treatment was not available in the provided clinical record. Drug susceptibility information beyond sputum smear microscopy was also not available, so the report assumes drug-susceptible disease based on response to first-line therapy. However, the diagnosis was supported by compatible MRI findings, sputum acid-fast bacilli positivity and clinical response to antitubercular therapy. The case adds to the limited literature showing that selected pregnant patients with Pott's paraplegia can recover completely with medical therapy when neurological deficit is incomplete and early improvement occurs.

DISCUSSION

This case illustrates that tubercular paraplegia in pregnancy, although rare, should be considered when a pregnant woman presents with progressive lower-limb weakness, increased tone, gait impairment or persistent back pain with neurological signs. The clinical lesson is particularly important in high-burden settings, where tuberculosis may coexist with pregnancy and where delays can occur because the initial symptom is often back pain rather than fever or pulmonary complaints. The major diagnostic challenge is that early spinal tuberculosis may mimic common pregnancy-related backache, while the neurological phase may resemble transverse myelitis, Guillain-Barré syndrome, spinal tumour, epidural abscess or metabolic neuropathy. In the present case, rapid MRI evaluation was decisive because it demonstrated D2 collapse, gibbus deformity, extensive prevertebral collection, epidural extension and cord compression. The positive sputum smear further supported tuberculosis and allowed timely initiation of treatment.

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CONCLUSION

Spinal tuberculosis should be considered in pregnant women with progressive lower-limb weakness, upper motor neuron signs or persistent back pain with neurological features. MRI allows early diagnosis without ionizing radiation and should not be delayed when cord compression is suspected. Although surgery is required in selected patients with progressive or complete neurological deficit, sphincter involvement or spinal instability, antitubercular therapy alone can lead to complete recovery in carefully selected cases. Early diagnosis, multidisciplinary care and close maternal-fetal monitoring are essential for preserving maternal neurological function and achieving a favourable neonatal outcome.

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