

Tuberculous Spondylodiscitis with Paraplegia in Pregnancy: A Rare Case Report

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Abstract

Tuberculosis continues to be a major health issue even now in a country like India due to its large population belonging to lower socioeconomic class. Tuberculous spondylodiscitis/Pott's disease in pregnancy leading to paraplegia is uncommon and is a diagnostic and therapeutic challenge. According to World Health Organisation (WHO), TB is the third leading cause of death worldwide in women of reproductive age group. 21% of global burden of TB in pregnant women is in India. We report a case of a 28 year old, G3A2, at 29 weeks +3 days who presented with progressive bilateral upper limb and lower limb weakness and urinary incontinence. She was evaluated and was diagnosed to have Nurick Grade IV cervical compressive myelopathy with upper motor neuron (UMN) bladder due to tuberculous spondylodiscitis of C4 and C5 vertebrae. She underwent Elective lower segment caesarean section (LSCS) followed by 2 level C4-C5 corpectomy with expandable cage fusion and posterior stabilisation and fusion. Anti-tubercular regimen for 4 months was started thereafter. With a multidisciplinary approach, there was a good maternal and neonatal outcome. TB in pregnancy mandates early suspicion, diagnosis and treatment for timely intervention to prevent sequential complications to the mother and baby. So in high risk population clinicians should have a high index of suspicion of TB. We here aim to update the knowledge in early diagnosis and management of a rare case of Pott's disease in the antenatal period which may help clinicians in their practice.

Keywords: Tuberculous spondylodiscitis; Pott's disease in pregnancy; Paraplegia in pregnancy.

Key message: Neurological manifestations in antenatal women especially in high risk groups for TB should prompt clinicians to consider a diagnosis of tuberculosis. Early initiation of anti-tuberculous drugs and if required adjunct surgery provides excellent maternal and neonatal outcome.

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INTRODUCTION

Spinal tuberculosis can rarely present as an initial manifestation of TB though usually occurs secondary to lung or abdominal involvement. Tuberculous spondylodiscitis/Pott's disease is an extra pulmonary entity of TB that affects spine. Pott's disease in pregnancy leading to paraplegia is uncommon and is a diagnostic and therapeutic challenge.

There are serious and sequential effects leading

to high maternal and perinatal morbidity due to TB in pregnancy. There has been an estimate of 45% reduction in number of maternal deaths worldwide from 1990 to 2013.¹ Although globally, direct obstetric causes like haemorrhage and hypertensive disorders accounts for major causes of maternal death; other non-obstetric causes including infectious diseases are now responsible for 28% of maternal mortality worldwide.²

It may be latent or active TB depending on which the management and follow up modalities differ. The symptomatic presentation of Pott's paraplegia is when there is a spinal cord conductivity interference due to inflammation causing oedema of spinal cord.³ In early onset paraplegia, signs occur early and palsy is more complete. However late onset paraplegia occurs 2 years after the onset of spinal lesion and the paralysis is usually incomplete and progressive in nature and requires surgical intervention.⁴ There may be associated hyperactive tendon reflexes and loss of sensation and sphincter control.

This report is of a 28-year-old G3A2 diagnosed with Pott's disease/Tuberculous spondylodiscitis with paraplegia during pregnancy and describes the challenges in diagnosis and management. A multi-disciplinary team approach aided in the prompt diagnosis to initiate immediate surgical intervention and start anti-tubercular regime which resulted in the excellent maternal and neonatal outcome.

The highest probability of women acquiring TB is during the reproductive age group. With such high incidence of burden of TB among pregnant women, timely diagnosis is critical for the well-being of pregnant woman and her foetus. Maternal care services can be used as a platform to improve case detection and therefore provide proper treatment and follow up.

CASE REPORT

A 28 year old, G3A2, with uncomplicated antenatal period presented to our antenatal clinic at 27 weeks + 3 days with neck pain radiating to both shoulders of 3 days' duration associated with tingling sensation over both upper limbs with no weakness. She was evaluated by Neuromedicine. Electroencephalogram was normal and was treated with analgesics. However, at 29 weeks + 3 days of

gestation she presented to obstetric casualty with deteriorating symptoms. There was significant increase in neck pain, distal muscle weakness of bilateral upper limbs. She also had sudden onset of difficulty in walking, gait instability and bladder incontinence. Motor and sensory examination of bilateral upper limb and lower limb demonstrated reduced tone (2/5) and exaggerated tendon reflexes with impaired position sense and sensory loss from C4-T6. Obstetric evaluation revealed viable foetus with normal interval growth scan. Antenatal steroids and magnesium sulphate infusion was given for accelerated lung maturity and neuroprotection respectively.

Plain radiographs of cervical spine obtained by abdominal shielding showed destruction of C4 vertebrae with telescoping of C3 vertebrae to C5 with widening of soft tissue into retropharyngeal space (Fig. 1A). Chest X-ray taken was normal. MRI of cervical spine showed features suggestive of infective spondylodiscitis of tuberculous origin showing severe compression of C4 and involvement of C3, C4 and C5 vertebral bodies and posterior element of L4 vertebrae (Fig 1B). A diagnosis of Nurick Grade IV cervical compressive myelopathy with upper motor neuron (UMN) bladder most probably due to tuberculous spondylodiscitis of C4 and C5 vertebrae was made.



Fig. 1A: Preoperative X-ray showing destruction of C4 vertebra with telescoping of C3 vertebra to C5 with widening of soft tissue into retropharyngeal space.



Fig. 1B: Preoperative magnetic resonance imaging showing severe compression of C4 and retropulsion and involvement of C3, C4, C5 vertebral bodies.

At 30 weeks + 4 days she underwent elective lower segment caesarean section (LSCS) with all necessary intra-operative anaesthesia precautions to prevent maternal hypotension, hypothermia and hypoxia and delivered a premature male baby of birth weight 1.725 kg with Apgar-3 at 1 minute and 6 at 10 minutes requiring neonatal ICU care with ventilator support and other supportive measures. Caesarean was then followed by 2 level C4-C5 corpectomy with expandable cage fusion.

Diagnosis of tuberculosis was confirmed by histopathology report of cervical vertebral tissue (Fig. 2) and nucleic acid based amplification test. Culture yielded *Mycobacterium tuberculosis* which showed sensitivity to first line anti tubercular

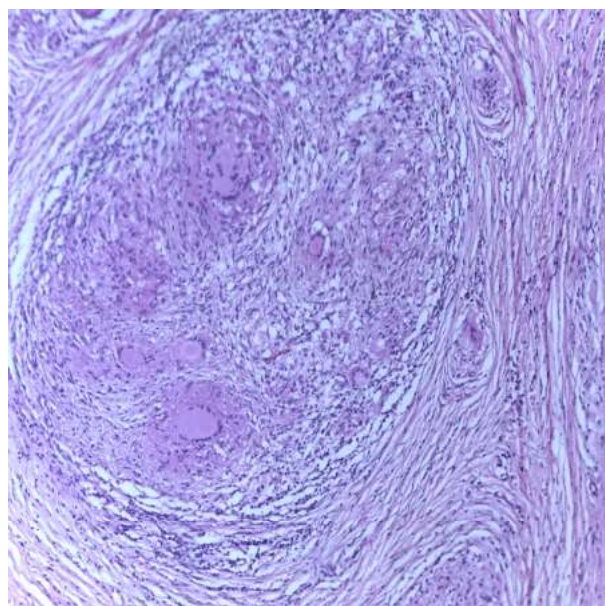


Fig. 2: Histopathology: necrotising granulomatous inflammatory lesion (H&E stain).

drugs (ATT) and hence was started on 4 month ATT regimen from post-operative day 3. On day 21 she underwent posterior stabilisation of C2 pedicle-C3 lateral mass and C6/C7 pedicle screws with posterior fusion.

Post-operative period was uneventful with gradual improvement in power and neurological status. Once patient was fit for self-mobilisation and self-voiding she was discharged on post-operative day 10 with advise to continue physiotherapy and ATT regimen for 4 months.

At 5 months follow up, X-ray cervical spine and CT cervical spine documented fusion (Fig. 3A, 3B) and patient had significantly improved neurological status. Baby was feeding well and healthy.



Fig. 3A: Postoperative X-ray showing implant in situ.



Fig. 3B: Postoperative computed tomography scan showing fusion at 5 months.

DISCUSSION

Tuberculosis infection caused by *Mycobacterium tuberculosis* accounts for affecting nearly 26.9 lakh people in India in 2018, that is more than a quarter of world's TB burden. In India, women of reproductive age group (15 to 49 years) face substantial burden contributing to 26% of all TB cases in 2019.¹⁻³ Although the exact incidence of TB in pregnancy is not accurately available, it is expected to be as high as in general population. Pott's disease (spinal TB) in pregnancy is reported to be rare and is associated with destruction of the intervertebral disc and adjacent vertebrae leading to cord compression and thereby resulting in paraplegia or quadriplegia. The risk of activation of latent TB infection is higher in pregnancy due to the immunological changes occurring. The sub clinical course of spinal TB in early pregnancy can progress to aggravation or worsening of diseases leading to spinal injury in late pregnancy. The symptoms of Pott's disease become obvious with neuronal conduction interruption within the spinal cord. Many of the TB symptoms may be masked by the physiological changes in pregnancy such as fatigue, low back pain, weight loss. The associated weight loss in TB may be temporarily masked by the normal weight gain in pregnancy, adding to the difficulty in diagnosis of TB. A possible differential diagnosis of Pott's disease should be in consideration when pregnant women presents with neck and back pain. Palpation of spinous process is the earliest and best clinical diagnostic tool.⁴

In latent TB, the bacteria are not transmissible and the patient may have no visible symptoms. However, she might have the chance of developing TB in future. When diagnosed with latent TB in pregnancy, treatment maybe held off for until two or three months till she has the baby. However, when pregnant women have several constitutional symptoms like persistent fever and night sweats, prolonged cough, dyspnoea, weight loss, fatigue, chest pain evaluate for diagnosis of active TB. If proved immediately, treat to prevent serious complications. Late diagnosis may increase the maternal mortality by about 4 folds and the risk of preterm labour increases by 9 fold.⁵

Untreated active TB are at increased risk for maternal and perinatal mortality and morbidity.⁶ TB in pregnancy can have detrimental and sequential effects on pregnancy like repeated reproductive failure, foetal morbidity, low birth weight babies, preterm delivery and TB of new born.⁷

Pott's disease requires meticulous evaluation to

reach a diagnosis and aggressive systemic therapy. Adjunct surgery to antibiotic therapy becomes a necessity in instances of vertebral collapse, neurologic compression or abscess. MRI has an important role in the diagnosis of spinal TB in pregnancy. Pott's disease may be treated after confirmation with biopsy taken by an interventional radiologist. It can be a challenge to successfully maintain a balance between the physiological demands of the mother and foetus during anaesthesia and surgery in left lateral position under general anaesthesia. Post operatively the care of the preterm neonate plays a major role for providing adequate weight gain and prophylaxis to prevent the transmission of disease. The first line drugs including pyrazinamide, rifampicin, isoniazid, ethambutol are not shown to have any significant adverse maternal foetal effects or need for dose adjustment during pregnancy and post-partum period.⁸ While medication is inevitable, other key factors like sufficient nutrition and emotional support must be ensured to the pregnant women. According to WHO and United Nations Multiple Micronutrient Preparation, all pregnant women and lactating women with active TB should receive multiple supplements of micronutrients. Babies born to this mother should be started on isoniazid prophylaxis for six months and then get vaccinated with BCG once tested negative.

Pott's disease with paraplegia has a good prognosis and outcome if timely surgical decompression and stabilisation is done along with chemotherapy. Vaginal delivery is not a contraindication but there are complications related to onset and progress of labour.

Water et al compared the outcome of TB in pregnant and non-pregnant women and reported that if appropriately treated both groups had equally successful outcome irrespective of their drug susceptibility profiles.⁹ A Swedish study concluded that there is a significant increase in the risk of activation of TB in pregnancy and post-partum period and hence routine TB screening is recommended in pregnant women belonging to the high risk group.¹⁰ Tuberculosis during antenatal and puerperal periods lead to both maternal and foetal complications. With innumerable obstacles and no definite protocol for management of Pott's disease in pregnancy, more evidence based literature and case reports on this crucial infectious disease in pregnancy is the need of the hour.

CONCLUSION

Here we aim to add knowledge to this controversial

field of tuberculosis and its uncommon neurological presentation in pregnancy. The magnitude of the disease burden should be acknowledged by each clinician and a low threshold for evaluation and diagnosis of TB should arise in cases of neurological presentations in pregnancy. Surgical intervention is many a times required along with systemic therapy to prevent the progression of the disease and its complications. National Maternal Health Programmes should consider routine screening of TB especially in high risk groups.

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