

# Successful treatment of total paraplegic patient due to tuberculous spondylitis

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## Keywords

Anti-tuberculosis drugs, disability, extrapulmonary tuberculosis, tuberculosis, tuberculous spondylitis.

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Received: 5 April 2018; Revised: 28 April 2018;  
Accepted: 2 May 2018; Associate Editor: Daniel Ng.

*Respirology Case Reports*, 6 (6), 2018, e00333

doi: 10.1002/rcr2.333

## Abstract

A 12-year-old boy presented with progressive disability to walk for four months, which was so severe that he could no longer perform daily activities. No respiratory symptom was found. On physical examination, there was a soft tissue mass in the thoracic vertebrae. Physiological reflexes of both limbs were diminished. Tuberculin skin test was positive with a 12 mm induration. Magnetic resonance imaging (MRI) of the spine showed a kyphotic cervico-thoracic region with predominantly anterior paravertebral mass that was enhanced with contrast, compressing the spinal cord at level Th-3 and Th-4, suggestive of tuberculous spondylitis. He was treated with regular anti-tuberculosis drugs. In the first four months, he began being able to sit, and two months later, he could walk again. After 12 months of treatment without surgery, MRI showed no more compression of the spine and remarkable resolution of paravertebral soft tissue mass. He then resumed his daily life again.

## Introduction

Tuberculous spondylitis (TS) is the most dangerous form of skeletal tuberculosis (TB), accounting for approximately 50% of all skeletal TB cases [1], particularly in children. It is becoming a considerable health problem due to the increasing prevalence of TB worldwide. Moreover, about 10–43% cases developed to neurological complications and severe disability.

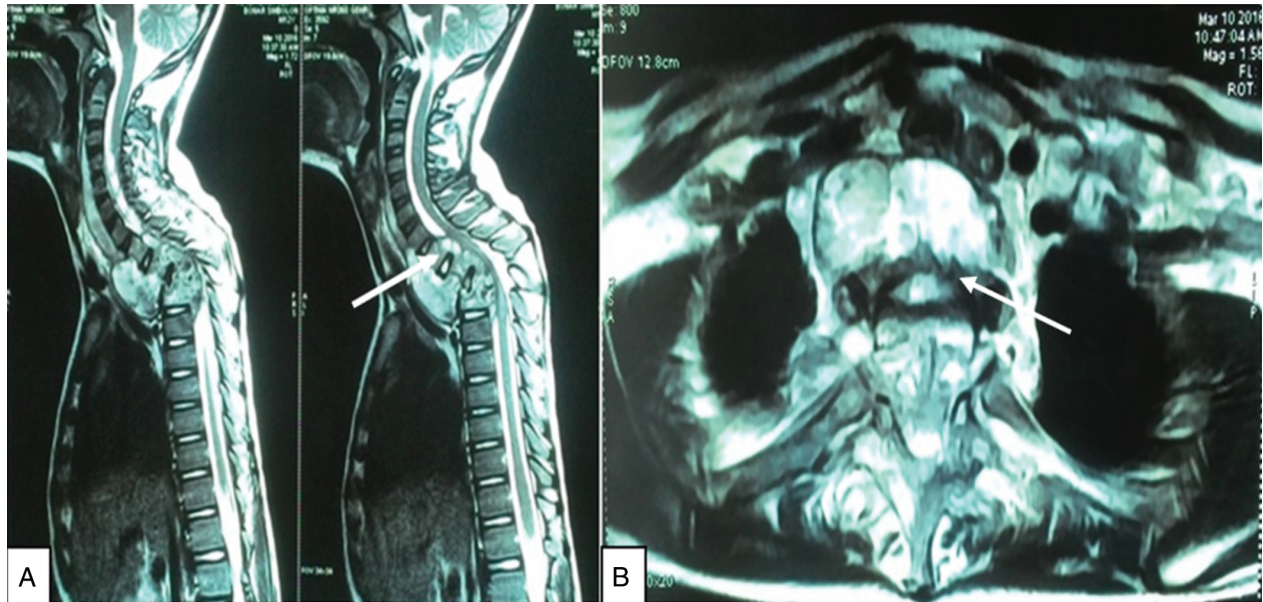
Tuberculous spondylitis can affect any part of the spine, but the thoracolumbar junction is the most frequently affected [1]. Destruction of disk space and surrounding organs will lead to nerve-root compression, resulting in severe and progressive kyphosis, known as Pott's disease. Currently, the term Pott's paraplegia describes paraplegia resulting from tuberculosis of the spine [2]. We describe the case of successful treatment of a total paraplegic patient who had TS.

## Case Report

A 12-year-old boy presented with progressive weakness of both lower limbs over the last four months that resulted in

total paraplegia, and he could no longer perform any daily activities. He had no history of cough, shortness of breath, or chest discomfort. The patient also complained of low-grade fever and significant loss of body weight. History of close contact with an infectious TB patient was denied. On physical examination, no abnormal breath sound was heard, but there was a soft tissue mass in the upper portion of the thoracic vertebrae, 8 × 5 cm in size. Neurological examinations demonstrated total paraplegia of both limbs and absence of physiologic reflexes. The tuberculin skin test was positive for a 12 mm induration. Chest X-ray was normal.

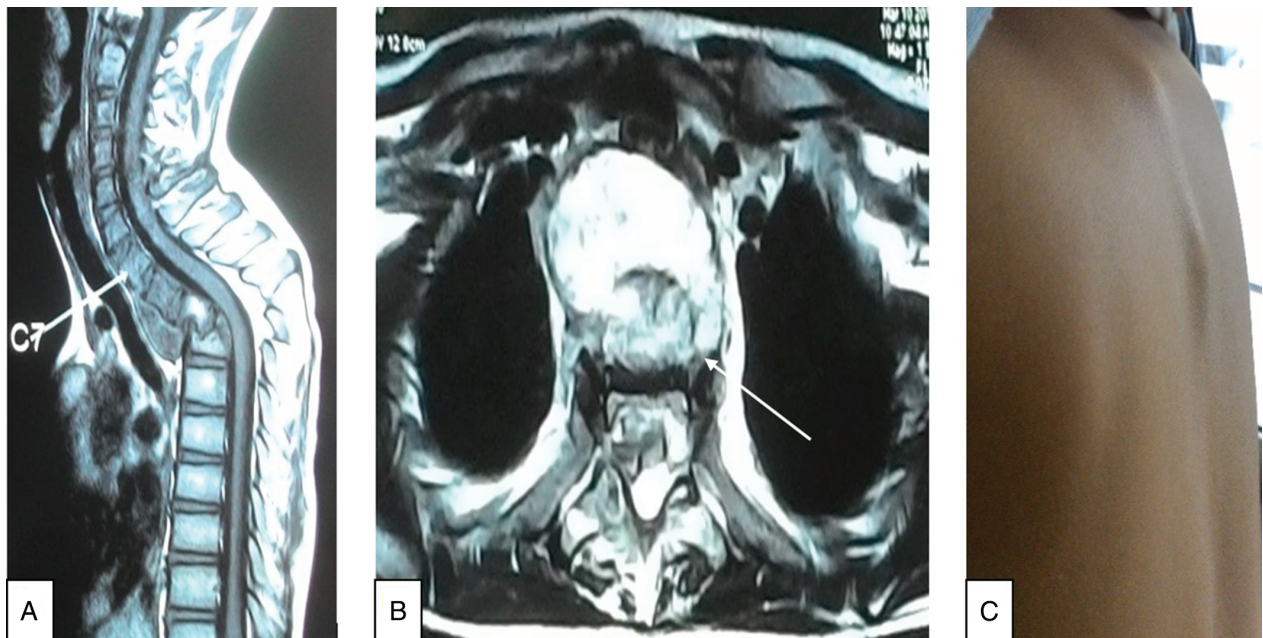
The sagittal view of the magnetic resonance imaging (MRI) demonstrated cervicothoracic kyphosis with a predominantly anterior paravertebral mass that was enhanced with contrast. The mass compressed the spinal cord at level Th-3 and Th-4 (Fig. 1A). There was involvement of spinal cord as well, suggestive of TS (Fig. 1B). The patient was diagnosed with TS and advised to undergo surgical treatment for laminectomy, but the patient refused due to financial issues.



**Figure 1.** (A, B) The magnetic resonance imaging demonstrated low signal and flattening of Th-4 and Th-4 corpus with paravertebral soft tissue mass surrounding it and narrowing of intervertebral disc along with ventral epidural defect from Th-1 down to Th-4, suggestive of tuberculous spondylitis.

The patient was then treated with anti-tuberculosis drugs, with a rifampicin-isoniazid-pyrazinamide-ethambutol regimen (RHZE) for two months, followed by 10 months of Rifampicin-Isoniazid (RH). After completing the intensive

phase, he began to be able to move his toes, although he was still unable to sit. Two months later, he was able to sit, and the motoric strength of both limbs improved. On the sixth months, surprisingly, our patient was able to stand



**Figure 2.** (A, B) The soft tissue mass in the posterior part of the vertebra completely disappeared, leaving only the anterior part; the size of anterior paravertebral mass reduced by 2 cm only. (C) However, the damage to the Th-2 and Th-3 vertebrae was permanent, leading to slight kyphosis on the cervical-thoracic region.

again and started walking just like normal. The patient was then treated with the regimen for 12 months.

Upon completion of the regimen, the subsequent sagittal view of the MRI demonstrated significant improvement compared with medulla spinalis change intensity (Fig. 2A); the soft tissue mass in the posterior part of the vertebra had completely disappeared, leaving only the anterior part in the axial view (Fig. 2B). However, the destruction of Th-2 and Th-3 vertebrae was permanent, leading to slight kyphosis on the cervical–thoracic region (Fig. 2C).

After 12 months of medical treatment alone, the treatment was stopped successfully. Because the size of the kyphosis was not functionally significant, it was left untreated. However, he was still advised to see a surgeon in case he felt the kyphosis quite disturbing. Eventually, he resumed his normal daily activities.

## Discussion

Tuberculous spondylitis is a frequently encountered destructive form of tuberculosis. The usual port of entry of *Mycobacterium tuberculosis* is the respiratory tract, gaining access for hematogenous dissemination into the vertebral bodies. The tubercle bacillus begins its destruction in cancellous bone and extends to the cortex, leading to vertebral collapse, kyphosis, and formation of debris and granulation tissue, which later compresses the nerve root [2,3].

Most patients described in case reports of TS presenting with paraplegia underwent surgical treatment. Here, we present a case of TS with severe disability that showed remarkable response from completely bed-bound until our patient finally walked again just like normal after 12 months of anti-tuberculosis drugs alone, without surgery.

Our case is not commonly found because, theoretically, patients presenting with neurological deterioration should undergo anterior radical focal debridement and posterior stabilization with instrumentation. The success rate of the surgical approach to TS with neurological deficit, combined with anti-tuberculosis drugs, nearly reached 80% [4]. In patients who are expected to have severe (>60°) post-treatment kyphosis, improving kyphosis is the goal in the active stage of treatment [1].

Aside from neurological deficit, other indications for surgery include paravertebral abscess, spine instability due to kyphotic deformity, and resistance to anti-tuberculosis drugs. In general, medical treatment alone is usually not recommended for severe cases to prevent complications due to a lack of evidence [1].

In contrast, medical therapy is the treatment of choice for those presenting without neurological deficit. Several guidelines exist regarding medication for TS. World Health Organization recommends anti-tuberculosis drugs for six months; however The American Thoracic Society and Canadian Thoracic Society, along with Indonesian local guidelines, recommends two months of RHZE treatment, followed by RH treatment for a total period of 9–12 month [1,5], in which tuberculosis symptoms and vertebral pain usually resolve in the first four to six weeks of treatment.

In conclusion, even though a combination of anti-tuberculosis drugs and the surgical approach yield the best outcome in patients with neurological deficits, medical treatment alone may be effective in very select cases, and close monitoring for any signs of deterioration should be instituted.

## Disclosure Statement

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

## References

1. Rasouli MR, Mirkoohi M, Vaccaro AR, et al. 2012. Spinal tuberculosis: diagnosis and management. *Asian Spine J.* 6(4):294–308.
2. Garg RK, and Somvanshi DS. 2011. Spinal tuberculosis: a review. *J. Spinal Cord Med.* 34(5):440–454.
3. Skaf GS, Kanafani ZA, Araj GF, et al. 2010. Non-pyogenic infections of the spine. *Int. J. Antimicrob. Agents* 36(2):99–105.
4. Wang Z, Ge Z, Jin W, et al. 2007. Treatment of spinal tuberculosis with ultrashort-course chemotherapy in conjunction with partial excision of pathologic vertebrae. *Spine J.* 7(6):671–681.
5. Jain AK. 2010. Tuberculosis of the spine: a fresh look at an old disease. *J. Bone Joint Surg. Br.* 92(7):905–913.