

# Upper Thoracic Spine Tuberculosis With Pathologic Fracture And Cord Compression

A Babashahi, S Mortazaviha, I Zaim, F Ranjbar, H Safari, A Teymoori, M Mashari, L Izadi, R Khoshnood, H Mirzaei

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## Abstract

We report a 17 year old lady with upper thoracic pain and bilateral leg weakness of approximate 3 weeks duration. For the previous 3 weeks she has experienced difficulty in walking. Due to neurologic impairment secondary to cord compression surgery is preformed immediately. The T3 and T4 lesions are approached through an upper thoracotomy and drainage of a paravertebral abscess followed by vertebral corpectomy and interbody fusion with bone harvesting taken from the iliac crest is performed. Then the graft is stabilized with a cervical plate. After surgery the patient started a four drug therapy for tuberculosis (TB) due to active TB.

## INTRODUCTION

Dorsal spine tuberculosis is the commonest type of tuberculosis involving the spine with a percentage occurrence of 42%. (1). Clinically the tuberculosis of the spine presents with, clinical kyphosis (95%), palpable cold abscess (20%), radiological prevertebral abscesses (21%), sinuses (13%), extra spinal foci (12%), visceral foci (12%), neurological involvement (20%), lateral shift (5%), and skip lesions (7%). (2) Unusually tuberculosis of the spine may present with clinical features of disc syndrome, appendicitis, cholecystitis, pancreatitis or renal disease.(2). We present a case of chronic nausea and epigastric pain who was treated for both upper gastrointestinal and cardiac problems. Eventually the patient's symptoms were traced to her thoracic spine tuberculosis. The patient was informed about the possibility of publication of her case history. Spinal TB may lead to serious disability and morbidity, especially when it affects the upper thoracic vertebrae. It is difficult to operate on upper thoracic vertebrae TB (T1-T4) because of its special anatomical position. Most of the previously described approaches are posterior, posterior lateral and cervical, but by the authors' surgical experience there are some disadvantages to these approaches. The posterior or posterior-lateral approach fails to create an adequate operative space because of the scapula(3). With the cervical approach, it is not easy to decompress the spinal cord at the

levels of T2 or T3 (4). Nowadays, the anterior transsternal approach is recommended. Advantages are safety and feasibility. In this study, a patient with upper thoracic TB treated by anterior transsternal approach is presented.

## CASE REPORT

A 17 year old lady with no significant medical history presented to the emergency department due to upper thoracic pain and bilateral legs weakness since 3weeks. For the previous 3weeks she has experienced difficulty in walking. She had not recently any weight loss lung sputum prediction or hemoptysis. The patient did not have diabetes or active TB. In the physical examination she was afebril and other vital signs were stable Tenderness was present in the upper thoracic region and proximal leg weakness was also present. The patient had power grading of 3/5 and increased deep plantar reflex about 3/2. Babinsky reflex was downward bilaterally. Laboratory examination and diagnostic tests were normal, The alkaline phosphatase was 36 U/L. The alanine aminotransferase was 140 U/L, aspartate aminotransferase 68 U/L. Erythrocyte sedimentation rate (ESR) was 82 mm/h. Urinalysis was normal. Serum electrophoresis showed mild increase in IgG, normal IgA. PPD skin test was negative. Two blood cultures had no growth. Sputum was negative for malignant cells and acid-fast bacilli (AFB).

A magnetic resonance imaging (MRI) revealed complete

destruction of the T3 and partial T4 vertebral bodies with displacement of adjacent disks.(fig.1). A large paraspinal soft tissue mass and cord compression at the level of T3, T4 vertebrae is noted.(fig.2) Surgery was preformed immediately. The T3 and T4 lesions were approached through upper thoracotomy and sternotomy approach. Debridment and vertebral corpectomy and interbody fusion, with bone fragment taken from illiac crest and anterior plate was done (fig,3). After surgery the patient's muscle power improved and her post operative course was uneventful. The patient was started on a four – drug anti TB regimen. The patient was discharged and received 12 months of anti TB treatment. Anti TB therapy and surgery muscle power cure and was about 5/5.

Figure 1

Figure 1



Figure 2

Figure 2



Figure 3

Figure 3



## DISCUSSION

TB is still common in today's society, especially in developing countries. Over the past two decades, the incidence of TB has tended to increase (5).According to reports from the World Health Organization, over two billion people suffer from TB. Spinal involvement is the

most common form of skeletal TB, accounting for half the cases (6). Because of the development of antiTB drugs and medical treatment, many patients with spinal TB are cured by chemotherapy. However, spinal TB may cause some complications such as late-onset neurological deficit, instability and kyphotic deformity, and chemotherapy has a poor effect in some patients, so surgical treatment is sometimes necessary(7-8) Indications for surgery include severe dorsal or back pain and/or radicular pain resistant to conservative treatment, neurologic deficits associated with bone destruction, sequestered bone and disc, cold abscess, instability, and progressive deformity(10-12) The aim of surgical treatment is radical debridement, decompression of the spinal cord and reconstruction of spinal stability. In spinal surgery, the anterior aspect of the upper thoracic spine is a difficult region to approach. Many vital structures, including osseous, articular, vascular and nervous ones, hinder adequate exposure. Posterior or posterior lateral approaches to the upper thoracic spine are commonly used, but have some disadvantages such as destabilization due to resection of ribs or vertebral plates, the need for a long posterior construct to restore stability, and difficulty in exposing the spinal cord and anterior vertebral body to reconstruct spinal stability. Moreover, for patients with spinal TB, the anterior column of the spine is often affected, sometimes resulting in compression of the spinal cord by the inflammatory focus, debris and caseation from the anterior aspect. Accordingly, anterior radical debridement and spinal fusion have been advocated and widely applied. The anterior approach for treating upper thoracic lesions was first attempted in 1957 by Cauchoix and Binet (12). Since then, several cases have been reported(9-11). The most popular approach is with or without anterior cervical exposure combined with a partial or complete sternotomy and resection of a portion of the clavicle may be needed. This exposure, which is almost intermediate between the esophagus and trachea, and on the lateral side of the left common carotid or brachiocephalic artery, has the disadvantages that ligation and section of the left innominate vein is supposed to reach T4 or T5 and injury to the thoracic duct can occur. Previous studies by the present authors have shown that the inside or outside window of the brachiocephalic artery may be a new and feasible approach for T1-T2 or T3-T4 vertebral bodies(13-14) In this study, 16 patients with upper thoracic vertebral TB underwent anterior decompression and fusion through an anterior transsternal

approach, and all of them achieved a good outcome. This indicates that the anterior transsternal approach provides safe and effective access for surgical treatment of upper thoracic TB. In short, this approach makes it is easy to expose lesions in T2-T4 and perform vertebrectomy and complete neurologic decompression. Moreover, as long as plenty of attention is paid to blunt dissection and gentle retraction, injuries of the esophagus, pleura, recurrent laryngeal nerve, vagus nerve, and vessel damage can be avoided.

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**Author Information**

**A. Babashahi, MD**

Department Of Neurosurgery, Ahvaz Jundishapur Of Medical Science University

**S.M.A. Mortazaviha, MD**

Department Of Neurosurgery, Ahvaz Jundishapur Of Medical Science University

**I. Zaim, MD**

Department Of Neurosurgery, Ahvaz Jundishapur Of Medical Science University

**F. Ranjbar, MD**

Department Of Neurosurgery, Ahvaz Jundishapur Of Medical Science University

**H. Safari, MD**

Department Of Neurosurgery, Ahvaz Jundishapur Of Medical Science University

**A.R. Teymoori, MD**

Department Of Neurosurgery, Ahvaz Jundishapur Of Medical Science University

**M.A. Mashari, MD**

Department Of Neurosurgery, Ahvaz Jundishapur Of Medical Science University

**L. Izadi, MD**

Department Of Neurosurgery, Shahid Beheshti Medical Science University

**R.J. Khoshnood, MD**

Department Of Neurosurgery, Shahid Beheshti Medical Science University

**H. Mirzaei**

, Medical Science University