

## Case Report: Non-Contiguous Multifocal Spinal Tuberculosis and Its Therapeutic Implications

**Juan Carlos Fernandez 1 & Maria Elena Ramirez**

<sup>1</sup>Associate Professor, Department of Pediatrics, University of Barcelona, Barcelona, Spain

Junior Resident, Department of Pediatrics, University of Madrid, Madrid, Spain

### **Abstract**

The spinal cord is involved in less than 1% of all cases of tuberculosis (TB). Non-contiguous spinal tuberculosis are found mostly in places with high prevalence like India but very few case reports have been published worldwide. Most of these patients have only two non-contiguous lesions, The disease is usually accompanied by severe neurologic deficits.

Here, we report a case of 11 year old girl presenting with on and off fever for 1 year and paraparesis for 1 month. On examination two gibus were found at T5-T6 and T11-T12 vertebrae. She was treated with anti tubercular drugs (ATT) and physiotherapy was given.

### **Keywords:**

*Tuberculosis, Spinal cord, non contiguous, Antitubercular treatment.*

### **Introduction**

Spinal tuberculosis is a destructive form of tuberculosis. Spinal involvement occurs in less than 1% of patients with TB [1]. Spinal TB (Pott's disease) is the most common as well as one of the most dangerous forms of skeletal TB and accounts for 50% of all cases of skeletal TB. Although the thoracolumbar junction seems to be the most common site of the spinal column involvement in spinal TB, any part of the spine can be affected [2]. Spinal tuberculosis is more common in children and young adults. [3] In old age, the disk is not primarily involved because of its age-related avascularity. In spinal tuberculosis, there is involvement of more than one vertebra because its segmental arteries bifurcate to supply two adjacent vertebrae. Spread of the disease beneath the anterior or posterior longitudinal ligaments involves multiple contiguous vertebrae. Genetic susceptibility to spinal tuberculosis has recently been demonstrated. Multi-level noncontiguous spinal tuberculosis is an atypical form of spinal tuberculosis that affects two noncontiguous vertebrae without destruction of the adjacent vertebral bodies and intervertebral disks. So far, there have been a few recent case reports with involvement of two or more noncontiguous vertebrae. Furthermore, the incidence of neurologic complications in spinal TB varies from 10% to 43% [4].

### **Case report**

A first order 11 year-old female child born out of non consanguineous marriage presented with a history of low grade on and off fever for 1 year and swelling over the back for 6 months following which the child was unable to walk for 1 month. She belonged to low socio economic status and family was overcrowded. There was contact history with tuberculosis in the neighbourhood. On examination, the child was cachectic with stable vitals. There were two swellings on the spine at T5-T6 and T11-T12 vertebrae. The swelling was painless and there was no redness. The higher functions were normal and cranial nerves were intact. The power in the upper limb was normal and that of the lower limb was 4/5. Radiological imaging of the thoracic spine showed multiple non contiguous osteolytic lesions at 5<sup>th</sup> and 6<sup>th</sup> thoracic vertebrae and at 11<sup>th</sup> and 12<sup>th</sup> thoracic vertebrae. The final diagnosis was an atypical presentation of multiple spinal tuberculosis was made. The patient was discharged with appropriate anti-tuberculosis therapy and steroids with immobilization of the spine by thoraco lumbar corset. After 2 months of follow up, there was improvement in power and patient was advised for 10 months continuation of therapy. There was no need for surgical intervention.



*Non contiguous gibbus*



*Radiographic image showing osteolytic lesions*

## **Discussion**

Predisposing factors for tuberculosis include poverty, overcrowding, illiteracy, malnutrition, alcoholism, drug abuse, diabetes mellitus, immunosuppressive treatment, and HIV infection. These are also predisposing factors for spinal tuberculosis as well[5]. Spinal involvement is usually a result of hematogenous spread of *M. tuberculosis* into the dense vasculature of cancellous bone of the vertebral bodies. The primary infection site is either a pulmonary lesion or an infection of the genitourinary system[6]. Spread of the infection via the intraosseous venous system may be responsible for central vertebral body lesions. In patients with noncontiguous vertebral tuberculosis, again it is the vertebral venous system that spreads the infection to multiple vertebrae.[7] Characteristically, there is destruction of the intervertebral disc space and the adjacent vertebral bodies, collapse of the spinal elements, and anterior wedging leading to kyphosis and gibbus formation. The thoracic region of vertebral column is most frequently affected. Formation of a 'cold' abscess around the lesion is another characteristic feature. The incidence of multi-level noncontiguous vertebral tuberculosis occurs more frequently than previously recognized.[8] Common clinical manifestations include constitutional symptoms, back pain, spinal tenderness, paraplegia, and spinal deformities. For the diagnosis of spinal tuberculosis magnetic resonance imaging is more sensitive imaging technique than x-ray and more specific than computed tomography. Magnetic resonance imaging frequently demonstrates involvement of the vertebral bodies on either side of the disc, disc destruction, cold abscess, vertebral collapse, and presence of vertebral column deformities[9]. Neuroimaging-guided needle biopsy from the affected site in the center of the vertebral body is the gold standard technique for early histopathological diagnosis. Antituberculous treatment remains the cornerstone of treatment. Steroid has role when neurological involvement is there. Surgery may be

required in selected cases, e.g. large abscess formation, severe kyphosis, an evolving neurological deficit, or lack of response to medical treatment. With early diagnosis and early treatment, prognosis is generally good.

## **Conclusion**

The prognosis for spinal tuberculosis is improved by early diagnosis and quick intervention. A high degree of clinical suspicion is required if patients present with chronic back pain, even in the absence of neurological symptoms and signs. Medical treatment is generally effective. Spinal tuberculosis affects young people, so efforts should be made for its effective prevention. Controlling the spread of tuberculosis is only way available to prevent spinal tuberculosis. In the patients with non-contiguous spinal involvement, there is a high percentage of requirement of surgical treatment along with a longer course of ATT. This type of multifocal spinal involvement as in our case is a rare entity.

## **References**

1. Rezai AR, Lee M, Cooper PR, Errico TJ, Koslow M. Modern management of spinal tuberculosis. *Neurosurgery*. 1995;36:87–97. [\[PubMed\]](#)
2. Moorthy S, Prabhu NK. Spectrum of MR imaging findings in spinal tuberculosis. *AJR Am J Roentgenol*. 2002;179:979–983. [\[PubMed\]](#)
3. Barnes PF, Bloch AB, Davidson PT, Snider DE., Jr Tuberculosis in patients with human immunodeficiency virus infection. *N Engl J Med*. 1991;324:1644–1650. [\[PubMed\]](#)
4. Sai Kiran NA, Vaishya S, Kale SS, Sharma BS, Mahapatra AK. Surgical results in patients with tuberculosis of the spine and severe lower-extremity motor deficits: a retrospective study of 48 patients. *J Neurosurg Spine*. 2007;6:320–326. [\[PubMed\]](#)
5. Turgut M. Spinal tuberculosis (Pott's disease): its clinical presentation, surgical management, and outcome. A survey study on 694 patients. *Neurosurg Rev*. 2001;24:8–13. [\[PubMed\]](#)
6. Boachie-Adjei O, Squillante RG. Tuberculosis of the spine. *Orthop Clin North Am* 1996;27(1):95–103 [\[PubMed\]](#)
7. Schirmer P, Renault CA, Holodniy M. Is spinal tuberculosis contagious? *Int J Infect Dis* 2010;14(8):e659–66 [\[PubMed\]](#)
8. Shanley DJ. Tuberculosis of the spine: imaging features. *Am J Roentgenol* 1995;164(3):659–64 [\[PubMed\]](#)
9. Currier BC, Eismont FJ. Infection of the spine. In: Herkowitz HN, Garfin SR, Balderston RA, et al., editors. (eds.) *Rothman-Simeone The Spine*. 4th ed Philadelphia, PA: W.B. Saunders; 1999. p. 1207–58.