CORPUS PUBLISHERS

International Journal of Orthopedics and Sports Medicine (IJOSM)

ISSN: 2833-8375

Volume 6 Issue 1, 2025

Article Information

Received date : July 01, 2025

Published date: July 18, 2025

*Corresponding author

Daniela Burguêz, orthopedic and traumatologist at Hospital São Lucas of Pontifical Catholic University of Rio Grande do Sul (PUCRS), Porto Alegre, Brazil

DOI: 10.54026/IJOSM/1017

Keywords

Spinal tuberculosis; Pott's disease; Neurological deficit

Case Report

Spinal Tuberculosis in Children - Case Report

Daniela Burguêz[1*], Fernando Augusto Dannebrock[1], Marcus Sofia Ziegler[1] and Erasmo de Abreu Zardo[2]

[1]*Orthopedic surgeon and traumatologist at Hospital São Lucas of the Pontifical Catholic University of Rio Grande do Sul (PUCRS), Brazil*

[2]*Professor at PUCRS Medicine School, orthopedic and traumatologist at Hospital São Lucas of PUCRS, Brazil*

Abstract

Spinal tuberculosis or Pott's disease is the most common bone manifestation of the disease, characterized by rapid vertebral destruction and spinal deformity. Clinical and radiological findings are not always sufficient to differentiate the disease from other comorbidities, such as neoplasms. The objective of this study is to report a case treated at a tertiary hospital in Porto Alegre of an 8-year-old female patient who presented with pain in the thoracic spine, gait alteration and weakness in the lower limbs for 1 week. Magnetic resonance imaging of the entire spine presents an expansive solid lesion with destruction of the T8 vertebral body with a reduction of the vertebral canal around 80%, with consequent severe kyphosis of the thoracic spine. The patient underwent surgery with a posterior approach, in which decompression was performed by laminectomy and fixation from T6 to T10. Anatomopathological examination confirmed the diagnosis of tuberculosis. The patient evolved well in the postoperative period and, one year later, presented resolution of neurological deficits, cure of tuberculosis and regression of the lesion. The authors report a case of Pott's disease, diagnosed after surgery, in which a radical and early surgical approach was essential to obtain the best possible prognosis.

Introduction

Spinal tuberculosis, also known as Pott's disease, is the most common bone manifestation of the disease, accounting for approximately 50% of cases. It is characterized by rapid vertebral destruction and spinal deformity [1]. Clinical and radiological findings are not always sufficient to differentiate the disease from other comorbidities, such as osteomyelitis and spinal tumours. Delayed diagnosis and treatment initiation can lead to serious complications. The presence of more cartilaginous bones and changes in the skeleton caused by growth place children in the main risk group for the most important sequelae of spinal tuberculosis [2]. The objective of this study is to report a case treated at a tertiary hospital in Porto Alegre of a child who presented significant neurological deficits. The main diagnostic hypothesis was malignant neoplasia. During staging, imaging findings suggested granulomatous disease and the diagnosis of bone tuberculosis was confirmed through anatomopathological examination after surgical treatment.

Case Report

An 8-year-old healthy female patient complained of pain in the thoracic spine for 1 month and gait changes and weakness in the lower limbs for 1 week, with no history of trauma. On physical examination, she presented ataxic gait, cogwheel sign, bilateral patellar hyperreflexia, and bilateral exhaustible clonus. The radiological examination showed slight convexity to the left of the thoracic spine and effacement of the pedicles of the T8 vertebra (Figure 1).

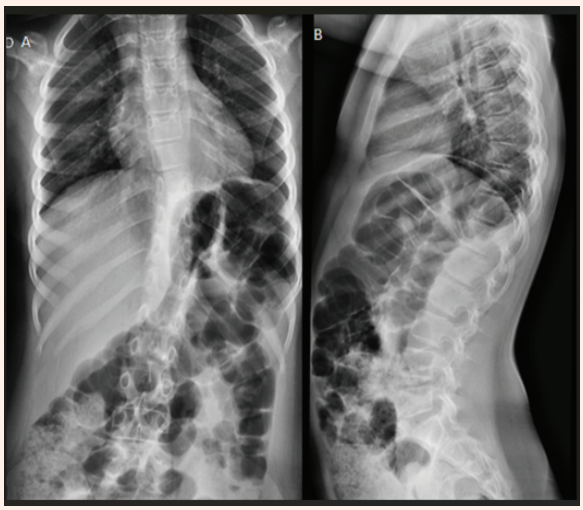

Figure 1: Anteroposterior (A) and lateral (B) radiograph of the thoracolumbar spine. It is possible to observe slight convexity to the left of the thoracic spine and effacement of the pedicles at the level of T8.

The patient was admitted on the same day for further investigation. Staging was initiated and pediatric oncology evaluation and monitoring was requested. Magnetic resonance imaging of the entire spine showed a solid expansive lesion with widening of the neuroforamen to the left of T7 and T8 and bilaterally at T8 and T9, partial destruction of the T8 vertebral body and the proximal portion of the left arch at this level, findings that accentuate the dorsal kyphosis. The signal is hypertensive on T1, heterogeneous on T2, with the central region of high T2 signal and low T1 signal, suggesting necrosis. The mass measures 4.4 x 4.0 x 3.9 cm. The spinal cord between T7-T9 is displaced anteriorly and to the right due to the expansive effect of the lesion and a reduction in the amplitude of the spinal canal of approximately 80% (Figures 2&3). Other images can be identified in the body of L1 and L5.

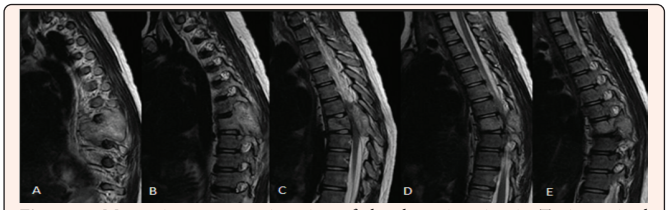

Figure 2: Magnetic resonance imaging of the thoracic spine in T2 in sagittal sections from left to right showing an expansive lesion centered on T8, further to the left, with destruction of the vertebral body, pedicles and spinous process at this level, extending to T7 and T9.

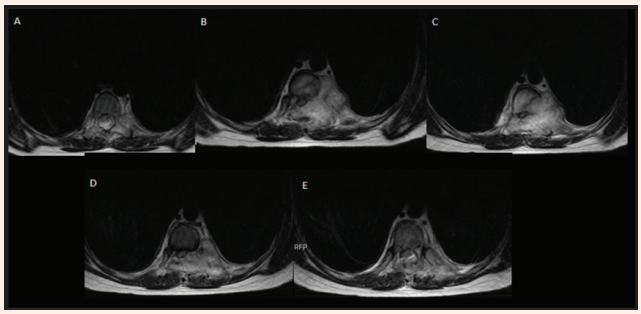

Figure 3: Magnetic resonance imaging of the thoracic spine in T2 in axial craniocaudal sections at the level of the T7 vertebra (A), T7-T8 intervertebral disc (B), T8 vertebra (C), T8-T9 intervertebral disc (D) and T9 vertebra (E), showing an expansive lesion affecting the spinal canal, further to the left, with severe stenosis at these levels.

Computed tomography of the chest and abdomen revealed cervical, supraclavicular, mediastinal and left hilar lymph node enlargement and necrotic right common iliac adenomegaly, suggestive of infectious granulomatous disease. Three-phase bone scintigraphy with technetium-99m methylene diphosphonate (99mTc-MDP) demonstrated a slight increase in blast activity in the costal arches adjacent to the thoracic lesion. The patient underwent surgery with a posterior approach, where decompression by laminectomy of T7-T9 and fixation of T6 to T10 were performed (Figure 4). During surgery, material was collected for anatomopathological analysis. Chronic epithelioid granulomatous inflammation with foci of caseous necrosis, compatible with tuberculosis, was found. AFB (Ziehl-Neelsen method) and fungal (Grocott) tests were negative. The patient's Mantoux test was also negative.

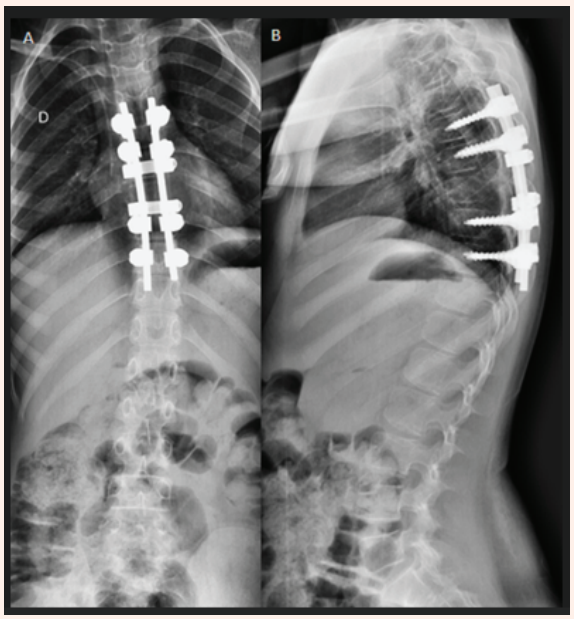

Figure 4: Postoperative anteroposterior (A) and lateral (B) radiographs showing adequate insertion of screws in the pedicles and vertebral bodies from T6 to T10.

The patient progressed well postoperatively, with resolution of pyramidal symptoms and independent walking. He was discharged with standard tuberculosis treatment, adapted for weight and age (rifampicin, pyrazinamide and isoniazid). After one year of follow-up, he presented resolution of neurological deficits and cure of tuberculosis. Control magnetic resonance imaging showed total regression of the lesion (Figure 5).

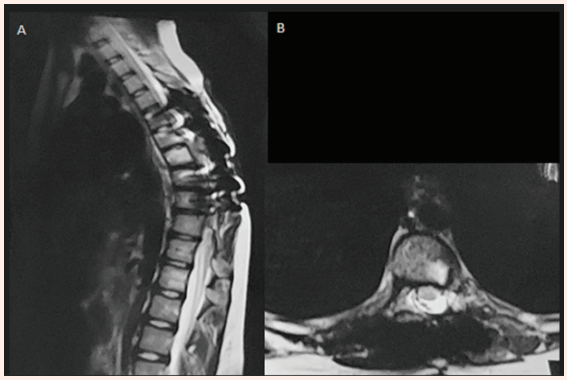

Figure 5: Control magnetic resonance imaging of the lumbar spine in T2 in midsagittal (A) and axial (B) sections at the level of the T8 vertebra showing regression of the lesion.

Discussion

Tuberculosis is a highly prevalent disease worldwide. Bone involvement is present in approximately 3% of cases [3]. The spine is the most affected site. When diagnosed and treated early with standard medications, cure is achieved in approximately 95% of cases without leaving sequelae [4]. With the advancement of discovery and improvement of tuberculostatics, conservative treatment is trending. A systematic review from 2007 showed that over 80% of patients underwent surgery with or without instrumentation [5]. A more recent analysis evaluated a smaller percentage of surgeries, with only 20% of patients with tuberculosis in the thoracolumbar spine undergoing surgery and half of these undergoing instrumented surgery [6]. Studies comparing drug treatment associated or not with surgery did not show any benefit in this group compared to the non-operated group, however few cases with significant preoperative neurological deficit were included [7].

Currently, only cases associated with neurological deficits and significant deformities are subject to surgery. The patient's age and comorbidities, number of affected vertebrae, location of the injury and neurological deficit are some of the factors that must be analysed before submitting the patient to surgical treatment. However, the decision whether to operate or not is still controversial, does not have well-established criteria and must be assessed individually in each case [8,9]. It is known that in children, unlike adults, even with the underlying disease cured, progression to kyphosis is a serious and frequent complication. Children under 10 years of age are in the group at greatest risk of developing deformities and are more susceptible to spinal collapse. The prognosis in the thoracic spine is worse when compared to that in the lumbar spine [2].

In some cases, clinical and radiological findings are indistinguishable between Pott's disease and malignant lesions. Primary spinal tumours in children include neuroblastoma, soft tissue sarcoma, Ewing's sarcoma, among others. Imaging tests and clinical history can provide clues to the diagnosis, but the gold standard remains the anatomopathological examination of the lesion [10].

Conclusion

In the case of our patient, who arrived at our service with significant neurological deficits, within the group at highest risk for severe sequelae (age under 10 years, 3 or more vertebrae affected, and lesion located in the thoracic spine), an early and radical surgical approach was essential to obtain the best possible prognosis. Decompression through laminectomy allowed the reversal of pyramidal symptoms and progression to independent walking. Arthrodesis of the thoracic spine stabilized the spine and corrected the kyphosis. Prolonged clinical and orthopedic follow-up proved the effectiveness of the chosen treatment, ensuring the cure of neurological deficits and underlying disease, without the need for further interventions.

Acknowledgement

I would like to thank the patient and her parents who allowed this case to be reported.

Reference

1. Chatterjee S, Banta A (2018) The spectrum of tuberculosis of the spine in pediatric age group: a review. Childs Nerv Syst 34(10): 1937-1945.
2. Rajasekaran S (2001) The natural history of post-tubercular kyphosis in children. Bone Joint J 83: 954-962.
3. Dunn R N, Husien M B (2018) Spinal Tuberculosis. Bone Joint J 100(4): 425-431.
4. Tuli SM (2013) Historical aspects of Pott's disease (spinal tuberculosis) management. Eur Spine J 22: 529-538.
5. Jain AK, Dhammi IK (2007) Tuberculosis of the spine: a review. Clin Orthop Relat Res 460: 39-49.
6. Ramos RDG, Goodwin CR, Abu Bonsrah N, Ali Bydon, Timothy F Witham, et al. (2017) The epidemiology of spinal tuberculosis in the United States: an analysis of 2002–2011 data. J Neur: Spine 26: 411-545.
7. Zhang X1, Ji J, Liu B (2013) Management of spinal tuberculosis: a systematic review and meta-analysis. J Int Med Res 41(5): 1395-1407.
8. Rasouli MR1, Mirkoohi M, Vaccaro AR, Kourosh Karimi Yarandi, Vafa Rahimi Movaghar (2012) Spinal tuberculosis: diagnosis and management. Asian Spine J 6(4): 294-308.
9. Rajasekaran S (2012) Kyphotic deformity in spinal tuberculosis and its management. Int Orthop 36(2): 359-365.
10. Emir S, Erdem AY, Demir HA, Ayper Kaçar1, Bahattin Tunç (2012) Spinal Tuberculosis (Pott's disease) Mimicking Paravertebral Malignant Tumor in a Child Presenting with Spinal Cord Compression. J Lab Physicians 4(2): 98-100.