CASE REPORT

Sacral Tuberculosis Masquerading as Meningocele

Devanand S. Kumar, MD, Anbazghan Periyasamy, MD, Shayee K. Shanjeev, MD*, Raj G. Rajgowtham, MD

Institute of Neurosurgery, Madras Medical College, India

Abstract

Background data: Spine is the most common site of extrapulmonary tuberculosis. Among the various spine segments, isolated involvement of the sacrum is the rarest presentation. A high index of suspicion is needed to diagnose and treat it.

Purpose: We present the findings of a presacral cystic lesion found to be tubercular because of its unusual presentation explaining the diagnostic difficulty, management, and outcomes.

Study design: This is a case report and literature review.

Patients and methods: We report a 12-year-old female child presenting with low back ache radiating to both thighs, difficulty in ambulation, and swelling in the right gluteal region. Imaging revealed a large well-defined CSF intense cystic lesion consistent with presacral meningocele. The patient was taken for lower midline laparotomy and repair of the meningocele. Intraoperatively, 500 mL of greenish-yellow pus was evacuated on opening the cyst. The nucleic acid amplification test of pus was positive for *Mycobacterium tuberculosis*.

Results: The patient ran a smooth postoperative course, and her symptoms improved.

Conclusion: Sacral tuberculosis is rare. Early diagnosis for these lesions is challenging, but results are highly satisfactory if done with proper planning and meticulous surgical techniques.

Keywords: Sacral spine, Tuberculosis, Meningocele

Introduction

The most common site of extrapulmonary tuberculosis (TB) is the spine. Most instances of spinal TB in industrialized countries are encountered among immigrants from endemic countries. With the rising incidence of immunosuppressive illnesses such as HIV and organ transplant recipients, more awareness of spinal TB is required. Vertebral TB is responsible for 2%–5% of all tuberculosis cases and 11%–15% of extrapulmonary tuberculosis [1]. Conversely, isolated sacral TB is uncommon. This unusual location might cause a delay in identification and treatment. We describe a case of sacral TB in a pediatric patient with no sacral bone erosion mimicking a presacral anterior meningocele.

Case history

A 12-year-old female child presented to our department with complaints of low back ache and pain in both thighs, which was worse at night, and difficulty in walking and standing for three months. Her mother had noticed a swelling in the right gluteal region for two weeks. She also gave a history of high-grade fever for the preceding week. Magnetic Resonance Imaging (MRI) of the lumbar spine revealed a large, well-defined CSF intense cystic lesion with incomplete septations in the presacral region from S1 to S4 extending into the gluteal...
region and measuring $8 \times 4 \times 2$ cm. The cyst was found to communicate with the lower sacral canal through the S3-4 interspace. A preoperative working diagnosis of presacral meningocele was made based on the MRI findings and report, and the patient was taken for lower midline laparotomy and repair of the meningocele. Intraoperatively, 500 mL of greenish-yellow nonfoul-smelling pus was evacuated on opening the cyst. Intraoperatively extension into the gluteal region could not be made out. Subtotal excision of the cyst wall was done. The posterior wall of the cyst was found to be densely adherent to the sacrum and was fulgurated with monopolar cautery. The postoperative period was uneventful, and the patient noted a reduced size of the right gluteal swelling. Routine bacterial cultures were negative. The nucleic acid amplification test of pus was positive for *Mycobacterium tuberculosis*. Histopathological examination of the cyst wall showed multiple epithelioid granulomas, Langhan's type giant cells, and focal areas of necrosis. Sputum was negative for Acid-Fast Bacillus (AFB). Retrospectively, on detailed history taking, there was no family history of TB. However, on screening with chest X-ray, her father was found to have sputum-positive pulmonary tuberculosis and he was managed accordingly. No constitutional symptoms, meningeal signs, or any primary focus of tuberculosis was found in our patient. Then, she was started on antitubercular drugs, which included an intensive phase of isoniazid, ethambutol, pyrazinamide, and rifampicin for a period of two months, following which the patient was started on a maintenance phase of isoniazid and rifampicin. At the seven-month follow-up, the patient was asymptomatic, after which she was lost to follow-up (Figs. 1 and 2).

**Discussion**

Worldwide, especially in India, TB continues to be a significant cause of illness and mortality. In 2015, there were 10.4 million new cases and 1.8 million deaths due to TB worldwide. Of these, it is calculated that 2.8 million new cases and 0.48 million TB-related deaths occurred in India in 2015. One of the earliest illnesses known to humans is spinal tuberculosis, which was discovered in Egyptian mummies from 3400 BC [2]. However, it was Sir

---

**Fig. 1.** Preoperative (A) MRI T2-weighted sagittal view showing a large presacral cystic lesion communicating with the spinal canal through the S3–S4 space; (B) MRI T2-weighted axial view showing presacral hyperintense lesion extending into the right gluteal region.

**Fig. 2.** Postoperative (A) MRI T1-sagittal image showing the minimal residual collection in the presacral region; (B) MRI T2-axial image showing the minimal residual collection in the presacral region.
Percival Pott, who, in 1779, first described tuberculous inflammation of the spine, which bears his name [3]. The frequency of skeletal TB is relatively low (approximately 1%−3%), with the spine being the most usually implicated, followed by the femur, tibia, and fibula [4]. Isolated sacral tuberculosis is an uncommon disease with Lindahl et al. [5] noting only in his series of 63 cases. According to Pertuiset et al. [6], the frequency was just 5%, whereas in a series of 107 cases of Pott’s spine, Lifeso et al. [7] noted no sacral tuberculosis. The specific causes of the low frequency of sacral TB have not been well explained in the literature. The disease begins with a primary focus in the lung or genitourinary system and disseminates hematogenously via valveless paraavertebral Batson’s plexus to the vertebral bodies [8,9]. Bacteria from the lungs or kidneys can also spread by lymphatic dissemination via paraaortic or perihiilar lymph nodes to the vertebra.

The patient’s age has a significant impact on the clinical signs and symptoms of sacral TB. Backache is a common clinical characteristic in adults, but discharging sinuses and abscesses are more common in younger patients. A case of sacrococcygeal TB manifesting as an anal fistula was described by Kumar et al. [10]. Due to the unique anatomy of the sacral nerve roots, being protected by surrounding bone, neurological deficits in isolated sacral TB are relatively infrequent [10].

Plain radiographs have a very low sensitivity to detect vertebral TB; they do not identify bony involvement until more than 50% of a vertebra has been damaged [11]. Similarly, in bone scans, this condition is notoriously difficult to recognize. According to Lifeso et al. [7], 35% of patients had normal bone scans despite having a lesion that could be seen on radiographs. For visualizing cortical bone, computerised tomography is helpful. However, observing the initial marrow changes that occur before the more obvious erosive changes can be challenging. It is possible that this was responsible for the disease not being detected at a nascent stage in our case, in which the CT findings were normal.

As a result, MRI may play a critical role in detecting early spinal lesions and determining the amount and degree of involvement, particularly in clinically inconspicuous places like the sacrum. TB osteomyelitis is distinguished by developing hypo-intense sacral marrow on T1-weighted images instead of the typically bright sacral marrow. T2-weighted imaging hyperintensity most likely indicates marrow edema. TB involvement in the sacroiliac joint is a rare finding [12].

A surgical biopsy confirms the presence of TB [13]. Several chemotherapy regimens have been suggested for treating spinal TB. Many practitioners recommend chemotherapy for six months, while some continue it for 9−12 months [14]. An excellent response to multidrug treatment for vertebral TB eliminates the necessity for surgery. Surgery may be required for the correction of spinal deformity caused by substantial destruction of numerous vertebral bodies, in the presence of neurological deficit, or to remove an abscess that is resistant to medical therapy (as in our case), or for the alleviation of pain, and to confirm the diagnosis. Given a prompt and accurate diagnosis and sufficient treatment, the prognosis for sacral TB is favorable [15,16].

**Conclusion**

Isolated sacral TB is uncommon, which sometimes leads to a delay in diagnosis. It should always be suspected in any condition characterized by sacral lytic alterations, particularly in endemic locations. This helps reduce the morbidity of this disease, which is typically and fortunately treatable with medications.

**Ethics Information**

The article does not contain information about medical device(s)/drug(s).

**Author declaration of funding statement**

No funds were received in support of this work.

**Conflict of Interest**

The authors report no conflicts of interest.

**Abbreviation List**

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSF</td>
<td>Cerebrospinal fluid</td>
</tr>
<tr>
<td>CT</td>
<td>Computerised tomography</td>
</tr>
<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
</tr>
<tr>
<td>MRI</td>
<td>Magnetic Resonance Imaging</td>
</tr>
<tr>
<td>TB</td>
<td>Tuberculosis</td>
</tr>
</tbody>
</table>

**References**


