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Isolated Intradural Extramedullary Tuberculoma Causing Paraplegia in an Immunocompetent Child: A Case Report and Review of the Literature

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Abstract

Intradural extramedullary tuberculoma of the spinal cord (IETSC) is an extremely rare modality of non-osseous spinal tuberculosis. It is even rarer in a child with only less than 8 known cases described in the literature. This spinal involvement constitutes only 2% of Central Nervous System (CNS) tuberculosis cases. Here, we described an exceptional case of a 7-year-old immunocompetent child admitted in our department for spastic paraplegia related to an intradural extramedullary tuberculoma after MRI and histopathological examination. He had been successfully operated and improved well after 12 months of antibacterial treatment.

Keywords

Tuberculoma, Spinal Cord, Thoracic Spine, Surgery

1. Introduction

Central nervous system (CNS) tuberculosis remains a serious health problem worldwide, especially in LMICs with a highest prevalence of spinal tuberculosis in which vertebral osteomyelitis known as Pott disease is the well-described. The spinal involvement in tuberculosis is about 10% of patients and tuberculous meningitis is the most common manifestation [1] [2]. Intradural extramedullary tuberculoma of the spinal cord (IETSC) is extremely rare [2] [3]. Only 8 known cases had been published in childhood in the literature. Here, we reported a rare case of

7-year-old immunocompetent child admitted in our department for paraplegia related to an intradural extramedullary tuberculoma.

2. Case Report

A 7-year-old child, well immunized according to his age, was admitted into our department for 6 months history of caught and fever complicated before his admission for a progressive disturbance of his lower limbs. In interrogatory, we noted no medical history. Physical examination found a cachexing child with fever, anorexia, asthenia with spastic paraplegia coted at 0/5, focal dorsalgia with gibbosity and bladder involvement. Spinal MRI showed an intradural extramedullary lesion located from T5 to T7, hypointense on T1 with contrast enhancement on T2 with remarquable spinal cord compression (Figure 1). Tuberculin skin test and serology HIV were negative. The preoperative biological investigation shows a slight normochromic normocytic anemia at 9.3 g/dl with hyperleukocytosis at 15.7 × 10^3/mm^3, a positive CRP at 83 mg/l and a hyponatremia at 129 mmol/l. Under supine position and general anesthesia through posterior midline approach, the paraspinal muscles were dissected and he underwent a laminectomy from T5 to T7. After opening the dura matter, we showed a yellowish intradural firm, avascular lesion measuring 24.8 × 10 mm in its large diameters' adherent to the dura and compressed the spinal cord with caseous material coming out the incision area. The mass was totally excised. Histological examination of the specimen revealed a granulomatous lesion with giant cells and caseating necrosis (Figure 2). Tissue stain for acid-fast bacilli was positive and consistent with the diagnosis of CNS tuberculosis. The patient was treated with antituberculosis medications including isoniazid, rifampicin, pyrazinamide, and ethambutol for 2

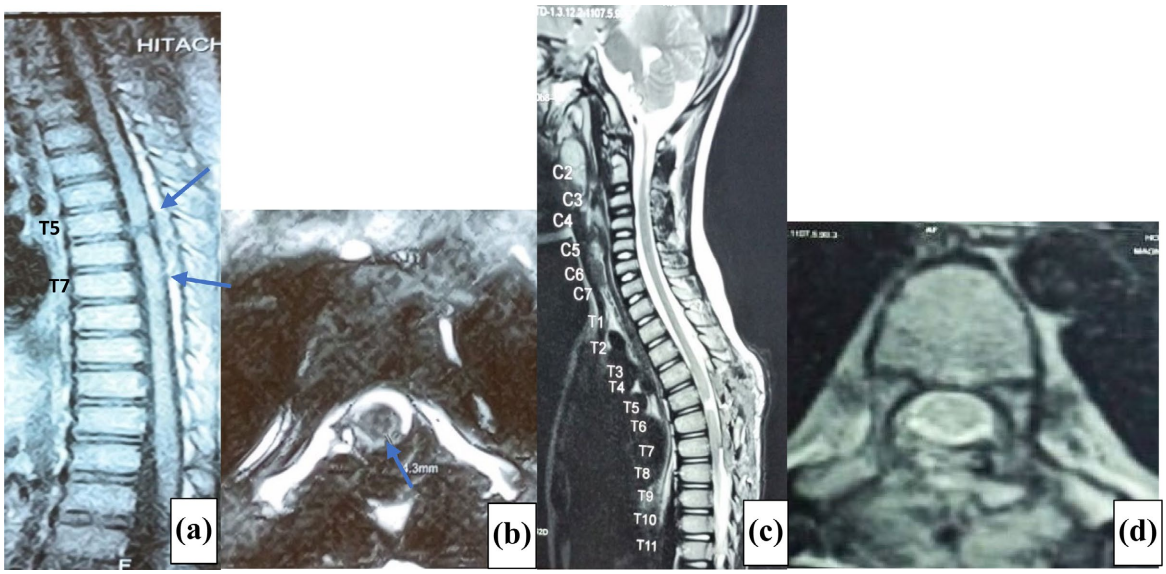

Figure 1. (a), (b) MRI sagittal and axial view showing an intradural extramedullary mass from T5-T7 level surrounding by edema and measuring 24.8 × 10 mm (blue arrow). (c), (d) Postoperative view showing a complete excision of the mass (sagittal and axial view).

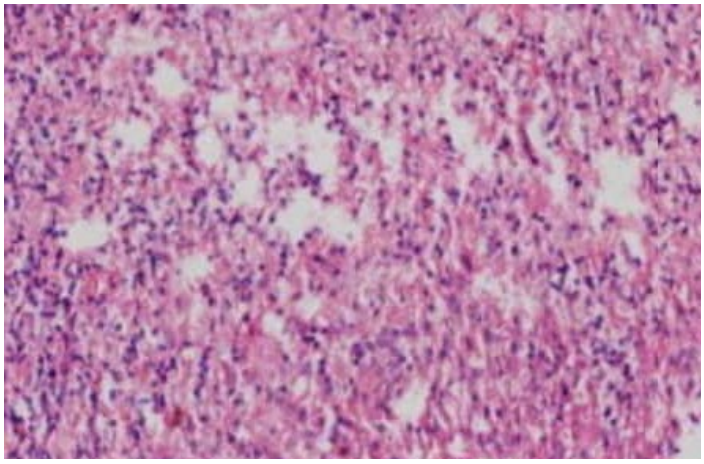

Figure 2. Histopathological examination shows the granulomatous structures containing giant cells formed by epithelioid histiocytes with caseating necrosis (×500).

months, followed by 10 months of isoniazid and rifampicin. The patient improved from his paraplegia and gained 2/5 just after 02 months on anti-tuberculous drugs and functional rehabilitation. The post-operative MRI was satisfactory and shown no recurrence after 9 months. Nowadays, he is walking alone without help.

3. Discussion

Central Nervous System tuberculomas is mostly located in the intracranial area and due to mycobacterium tuberculosis. Some cases can spread into the spinal canal, with possible neurological symptoms due to cord or neural structures compression. This spinal involvement in tuberculosis is classified into four categories: Pott's spine, nonosseous spinal including extradural or intradural intramedullary/extramedullary tuberculous, tubercular arachnoiditis, and spinal meningitis [4] [5]. Intradural extramedullary tuberculoma in childhood is a rare manifestation of spinal tuberculosis with only 5 cases described in the literature [3] [5]. It's characterized by the development of a tuberculoma (a mass of tuberculous tissue) within the spinal canal, but outside the spinal cord itself, within the protective membrane (dura mater) surrounding the cord. All these previous cases reported in the literature frequently occur after tuberculosis meningitis [2] [3]. Our case is exceptional for its isolated presentation in a child. The most common site of predilection is the thoracic spine [4] [6]. They can occur without any predisposing factor or any gender distribution. Luo *et al.* reported a case of intradural TB in a 51-year-old healthy HIV-negative patient with no known primary infection and no risk factors for exposure [5]. To our knowledge, any case of IETSC in an immunocompetent child with no known primary tuberculosis infection or risk factors had been published before, perhaps ours is the first one. The clinical symptomatology includes from tuberculous impregnation to severe cord compression signs which can lead to complete paraplegia with bowel and bladder involvement. Our patient had been admitted with paraplegia Dastur *et al.* in 1983 reviewed 74 cases of spinal tuberculomas and found that 65% of tuberculomas were extradural,

8% intramedullary, 5% intradural extramedullary, and 20% arachnoidal [7]. Intradural tuberculomas are slowly progressive and have been shown to develop despite adequate antituberculous treatment [2]. Spinal MRI is the gold standard diagnosis tool for IETSC. Classically, these lesions are described as hypointense lesions in MRI on T1; however, subsequent research has demonstrated that the intensity of the lesion changes relative to the disease stage: isointense in early-stage disease and hypo- or hyperintense in late-stage disease [8]-[10]. Prompt surgical removal of the tuberculoma, combined with antituberculous medication and corticosteroids, is the standard approach to treatment [3] [5]. The histopathological analysis confirmed the diagnosis of tuberculosis infection [11] [12]. This attitude was done in our case reported. In some rare cases, the diagnosis can be confirmed too by Polymerase chain reaction (PCR) [13] [14].

In patients with IETSC with neurological deficit, prompt surgical decompression and antitubercular chemotherapy give good results with excellent prognosis [3] [5] [12] [13].

4. Conclusion

IETSC is an extremely rare form of spinal tuberculosis in children. It must be considered among all patients with spinal cord compression despite the age. Early diagnosis and prompt aggressive surgical decompression associated to antituberculous drugs administration more than 12 months give an excellent result and minimize the risk of permanent neurological damage.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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