

SPINAL INTRAMEDULLARY TUBERCULAR ABSCESS: A CASE REPORT

Rahman A¹, Rashid MHU², Haque MM³, Hossain ATMM⁴,

Abstract

Spinal intramedullary tuberculosis (IMT) is a rare entity. With the widespread availability of Magnetic Resonance Imaging (MRI) and the increasing incidence of HIV and HIV-related tuberculous infections, the incidence of these lesions is likely to increase worldwide. We present a case of spinal intramedullary tubercular abscess in the thoracic region secondary to pulmonary tuberculosis in a 17-year-old female patient who presented with subacute spinal cord compression. Contrast enhanced MRI revealed a ring enhancing lesion with central hypointensity, suggesting granulomatous pathology. Surgical excision of the intramedullary lesion was carried out by standard technique. Histopathological examination of the mass revealed a granulomatous lesion containing Langhans-type giant cells and lymphocytes and central caseous necrosis leading to a diagnosis of spinal intramedullary tubercular abscess (ITA). The management of these rare lesions is discussed and literature reviewed. We report this case for its rarity and to the best of our knowledge this is the first reported case in our country.

Key words : Magnetic Resonance Imaging, Spinal Intramedullary Tubercular Abscess (ITA), Pulmonary tuberculosis, Granulomatous lesion.

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Introduction

Intramedullary spinal tuberculoma is a rare form of central nervous system tuberculosis^{5,6,10}. Intradural spinal tuberculomas comprise about 2-5% of spinal tuberculosis, while intramedullary spinal tuberculomas (IMT) are still rare, the incidence quoted being 2 in 100,000 cases of all tuberculosis⁷. Spinal intramedullary tubercular abscess (ITA) is least common among various forms of spinal tuberculosis^{3,4}. Tuberculosis (TB) is the most common cause of vertebral body infection not only in underdeveloped and developing countries but in developed countries as well because of an increasing number of immune-compromised patients. While the clinical manifestations and radiological features of classical spinal TB are well known and the diagnosis

is readily made, some atypical forms have been reported which may prevent early recognition of the disorder and accurate diagnosis. These atypical forms of spinal TB should be kept in mind in order to establish an early diagnosis and treatment, which otherwise may result in irreversible neurological sequela.⁸

Case Report

A 17 years old female presented with the complaints of pain in the mid dorsal region of the spine for 4 months and gradually progressive spastic paraparesis for 1 month. She also developed urge incontinence for 15 days. She had lost some weight and also had loss of appetite for about 1 month. She did not give history of any fever or night sweating, cough or haemoptysis. Her paternal uncle had pulmonary tuberculosis 3 years back and had full course of anti Koch's therapy. On examination she was found to be a young lady of below average built. General examination revealed that all the parameters were within normal limits. She had tenderness over her mid dorsal spines but no gibbus. Her lower limbs were spastic and paraparetic with muscle power of grade 3/5 at all joints. All the reflexes were exaggerated in the lower limbs with bilateral extensor planter responses. She also had sustained bilateral ankle clonus. There was a sensory level at D 6. Her ESR was 116 and

1. Dr. Asifur Rahman; MS, Assistant Professor, Department of Neurosurgery, Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka-1000
2. Dr. M Harun-Ur Rashid; MS, OSD, DGHS, Government of Bangladesh
3. Dr. M Moududul Haque; Ph D, Assistant Professor, Department of Neurosurgery, Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka-1000
4. Dr. A T M Mosharef Hossain; FCPS, Professor, Department of Neurosurgery, Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka-1000

Correspondence : Dr. Asifur Rahman, Assistant professor, Department of Neurosurgery, Bangabandhu Sheikh Mujib Medical University, Shahbag, Dhaka – 1000, E-mail: bijoun14@yahoo.com

Mauntoux test was positive (13mm). X-ray chest revealed a right upper zone consolidation suggestive of pulmonary tuberculosis. We started anti tuberculous therapy (ATT). Her MRI of dorsal spine revealed a spinal cord intradural intramedullary mass lesion with cystic degeneration having ring enhancement after administration of contrast mimicking an abscess at D 4 level. (Fig.-1) We explored the lesion through a laminectomy of D 4 with removal of lower part of D 3 and upper part of D 5 laminae. After opening the tight, bulged and non pulsatile dura, in the midline, the cord was found to



Fig.-1: Contrast MRI of dorsal spine in coronal section showing intradural intramedullary solid cystic SOL with ring enhancement at D 4 level.

be swollen. Under microscope midline myelotomy was done and a capsulated lesion with dense adhesion with the parenchyma as well as having some extramedullary extension and adhesion with the dura was encountered. We tried to dissect out the SOL along the capsule but it was not possible. So, we incised the SOL and thick, cheesy pus came out. (Fig.-2) Pus was sent for culture and sensitivity which later yielded no growth. After evacuation of the cavity we excised the capsule near totally in

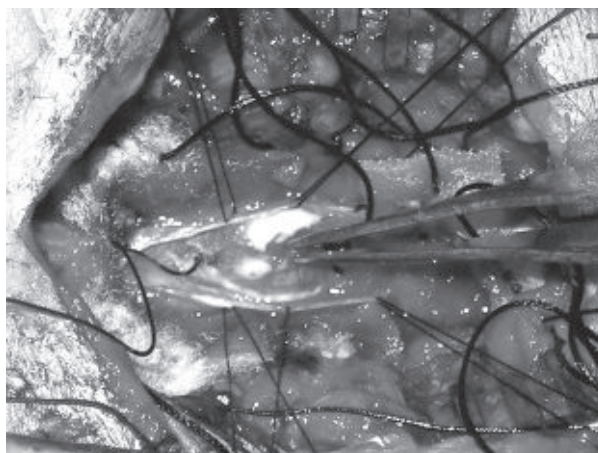


Fig.-2: Peroperative picture showing thick, cheesy pus coming out after incision on the SOL after myelotomy.

piecemeal fashion and biopsy from the wall revealed chronic granulomatous lesion containing Langhans-type giant cells and lymphocytes and central caseous necrosis (Fig.-3) leading to a diagnosis of intramedullary tubercular abscess. Vigorous saline irrigation was given. Patient was advised to continue the anti-Koch's. Post operatively her paraparesis improved and she started to walk with support, though the urge incontinence did not improve. She was doing well and was improving gradually with physiotherapy for 7 months post operatively. After that she was lost to follow-up.

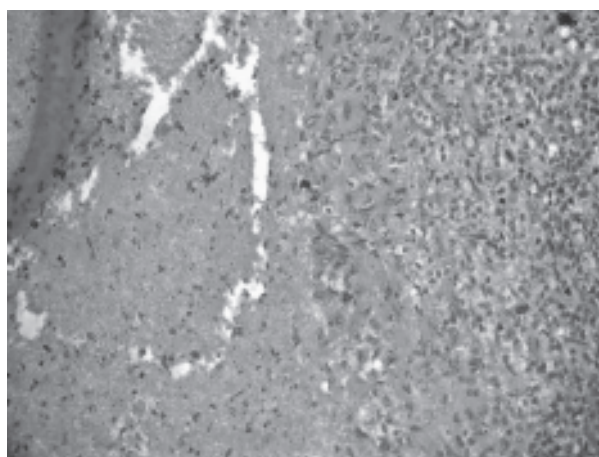


Fig.-3: Photomicrograph (H & E, X40) of wall of the SOL showing chronic granulomatous lesion containing Langhans-type giant cells and lymphocytes and central caseous necrosis.



Fig.-4: Contrast MRI of dorsal spine in sagittal section showing a ring enhancing lesion at D4 level.

Discussion

Spinal intramedullary tubercular abscess is a rare clinical entity, even in geographical areas where tuberculosis is endemic. The first report of Intramedullary tuberculoma (IMT) was by Albercrombie in 1828. Only 83 cases of Intramedullary Tubercular Abscess (ITA) have been reported till 2003 in the literature since the original case documented by Hart in 1830.^{2,4,8} Intramedullary tuberculomas occur usually in young people and usually in the thoracic spinal cord.^{1,2} Our patient was a young lady of 17 years and had her lesion at D 4 level, as said in the literature, the thoracic spinal region to be the commonest site. Central nervous system involvement of tuberculosis is rare compared with involvement of other systems. The central nervous system involvement is very rare affecting 0.5–2% of the cases of tuberculosis. The commonest form of central nervous system tuberculosis is meningitis while tuberculoma is unusual.^{1,4,8} To the best of our knowledge this is the first reported case of spinal intramedullary tubercular abscess in our country though tuberculosis is quite a common disease here. Intramedullary tuberculosis is almost always secondary to pulmonary tuberculosis with rare

exception as extrapulmonary form alone and may originate in three ways: (1) by haematogenous spread from an origin outside the CNS, (2) via secondary extension caudally from cranial tuberculous meningoencephalitis and (3) by secondary intraspinal extension from osteoarticular or discal TB. Haematogenous spread from an origin outside the CNS was reported to be the most common route of infection resulting in radiculomyelopathy.^{2,4,8} In the present case the patient had evidence of pulmonary tuberculosis and haematogenous spread from the lungs was the most likely pathway for spread to the cord. Tuberculoma or TB abscess may develop anywhere within the thecal sac. It is usually closely adherent to the inner aspect of the dura and to the cord into which it penetrates like a crater, so in occasional cases it becomes very difficult to define whether the intradural tubercular lesion is extramedullary or intramedullary. Abscess formation becomes manifest by the accumulation of the necrotic tissue, debris and caseous material as the disease progresses.⁸ MRI of our patient showed a lesion that was a little confusing whether it was intramedullary or extramedullary. Per operatively it seemed that it was an intramedullary lesion but had some extramedullary part as well. Recent case reports have presented intramedullary tuberculoma found in patients with HIV, auto-immune disease, especially systemic lupus erythematosus and patients undergoing immunosuppressive treatment.¹ Spinal TB may present with a wide spectrum of clinical manifestations and the medical history is seldom helpful in the differential diagnosis. Majority of the patients present with signs and symptoms of spinal cord compression with minimal symptoms of tubercular toxemia and fever or other systemic symptoms may not become evident until the late stage.^{4,8} Our patient presented with mid dorsal pain, gradual spastic paraparesis and urge incontinence suggestive of spinal cord compression in the dorsal region. She had loss of appetite and loss of weight that raised the suspicion of tuberculosis or something malignant. As she also gave history of tuberculosis of her paternal uncle, our suspicion of tuberculosis in this patient was intensified.

Multiple imaging modalities such as conventional radiography, scintigraphy, computed tomography and myelography have all been reported to be helpful in the diagnosis of spinal TB, but MRI is relatively more sensitive and is believed to be the modality of choice in the appropriate clinical setting.⁸ The magnetic

resonance imaging appearance by hypointense ring enhancement, with or without central hyperintensity (reflecting caseating necrosis) on T2 images

and hypo to isointense rings on T1 images. These are ring lesions typical of abscess with GdDTPA ring enhancement. However, MRI findings are indistinguishable from intramedullary tuberculoma in many cases.^{1,2,4,8} We did an MRI of dorsal spine which showed a ring enhancing lesion on contrast images (Fig. – 4) that was iso to hypo-intense in T1WI and hyper-intense in T2WI. In a majority of the cases ESR is elevated and skin tests are usually positive. Almost half of the patients with extrapulmonary TB have normal chest X-ray findings.⁸ ESR of our patient was 116mm and MT was positive. She also had a right upper zone consolidation on her chest X-ray, all of which were strongly in favour of a tubercular lesion both in the lungs and in the cord. Intramedullary tubercular abscess may be diagnosed by presence of acid-fast bacilli within the tissue or by positive cultures.² Neither acid-fast bacilli was found in the tissue nor the pus yielded any positive culture in this case. Histological examination usually reveals a granulomatous lesion that contains Langhans giant cells, inflammatory cells, and caseating necrosis,^{9,10} all of which were seen in histopathological findings in our case.

Presently specific anti tuberculous therapy (ATT) is the primary modality of management. Surgery in the treatment of spinal intramedullary tuberculomas may be indicated for a) large lesions with rapid deterioration of the neurological status, b) non-specific neuroimaging features, c) paradoxical increase in the size of the lesion following antituberculous therapy. surgical decompression is done to establish the diagnosis as well as to decompress the cord.^{1,2,4,8} We did near total surgical excision of the lesion and continued the anti Koch's. We advised the patient to continue it for a total span of 18 months as per the protocol that we follow for any CNS tuberculosis. We followed the patient up for 7 months post operatively and during the whole follow up period she was gradually

improving clinically after which she was lost to follow up.

Conclusion

Spinal intramedullary tubercular abscess (ITA), although a rare entity, should be considered in the differential diagnosis of the spinal cord compression in patients with a history of tuberculosis, specially with evidence of tuberculosis else-where in the body in endemic regions. A combination of microsurgical resection and 4 drug antituberculous regimen for long time should be the choice of treatment for intramedullary tubercular abscess.

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