Isolated Intramedullary Spinal Cysticercosis: A Case Report with Review of Literature of a Rare Presentation

Abstract

A number of parasitic infections can involve the central nervous system of which neurocysticercosis (NCC) is the most common one in developing countries. Most often the brain is involved, spine and spinal cord involvement is very rare and intramedullary involvement is rarer still. Here, we report a 30-year-old male patient, with intramedullary NCC of dorsal spinal cord.

Keywords: *Albendazole, parasitic infection, spinal intramedullary neurocysticercosis*

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Introduction

Neurocysticercosis (NCC) is the most common parasitic infection of central nervous system (CNS) affecting population worldwide and caused by Taenia solium.[1,2] Spine is an uncommon site of cysticercal infestation and intramedullary involvement is even rarer.[2] The disease is predominantly intracranial, the incidence of spinal NCC being a lowly 1.5 to 3%.[1] Spinal cysticercosis represents a distinct clinical entity. In view of limited size of the spinal canal the mass effect of these lesions is poorly tolerated and can have debilitating consequences.[1] According to the location in spine, cysticercosis has been classified anatomically as extraspinal (vertebral) or intraspinal (epidural, subdural, arachnoid, or intramedullary), of which the intramedullary type is quite rare and only 53 cases have been reported until 2010.[3-7] We report a 30-year-old male patient, with intramedullary NCC above the conus medullaris (D11 level) which is a unique case of isolated primary spinal intramedullary cysticercosis, without evidence of intracranial involvement.

Case Report

A 30-year-old male patient presented with a low backache since 1-month, radiation of pain to the right lower limb and weakness of the right lower limb since 20 days. Neurological examination revealed, muscle strength grade III proximally and grade IV distally according to Medical Research Council (MRC) in the right lower limb and grade V in the left lower limb with impaired fine touch and pain sensation in L5 and S1 dermatome, with absent knee and ankle reflexes in the right lower limb and plantar reflex was mute on both sides.

An anatomical localization of thoracic spinal cord lesion was made. Magnetic resonance imaging (MRI) of spine revealed bulky edematous spinal cord from D4 vertebral body to D12 vertebral body along with a intramedullary ring enhancing lesion of size 1.1 cm × 0.9 cm located above the conus medullaris at the level of D11 vertebrae lesion was hypointense on T1 and hyperintense on T2 with ring enhancement on contrast [Figure 1]. Scolex could not be identified. MRI of the brain was normal.

Differential diagnosis of spinal NCC and tuberculoma was considered. Diagnostic cerebrospinal fluid analysis by nucleic acid amplification test was positive for anti-cysticercal antibodies; a final diagnosis of spinal neurocysticercosis was made. Peripheral smear revealed neutrophilic leukocytosis and stool examination was negative for ova and cyst. The patient had no history of consumption of pork.

In view of the small size of the lesion, extensive cord edema, and demyelination; the patient was managed conservatively, and surgery was deferred. The patient was initially treated with dexamethasone followed by addition of albendazole therapy (400 mg OD). At the time of discharge

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patient had significant neurological improvement and MRC grade IV in the left lower limb with improved sensations in L5 and S1 dermatome. At follow-up after 6 weeks of albendazole therapy, there was a significant reduction in symptoms with improved MRC grade V. Follow-up MRI showed a reduction in the size of lesion and edema of cord [Figure 2].

Discussion

Cysticercal infestation of the CNS was first described in humans in 1550 by Paranoli.[8] Rockitansky in 1856 made first reference about intraspinal cysticercosis.[9] Compared to intracranial infestation, the incidence of spinal NCC remains very low with less than 200 cases being reported in world literature.[1] In 1963, Canelas *et al.* reported a 2.7% incidence of spinal NCC in 296 cases of NCC.[10] The greater incidence of brain involvement is postulated to the fact that blood flow to the brain is approximately 100 fold greater than the spine.[11,12] An intramedullary lesion occurs as a result of direct hematogenous spread similar to what is seen in parenchymal intracranial NCC.[12,13]

Myelopathy and radiculopathy induced by spinal cord or root compression are the usual symptoms related to spinal NCC.[10,14,15] Diagnosis depends on imaging and serological tests. On MRI, intramedullary cysticercosis appears as a cystic lesion within the spinal cord, lesion is hypointense on T1 with hyperintense scolex identified inside the cyst cavity, hyperintense on T2 in vesicular stage and a subtle hypointense rim may surround the intramedullary cyst on T2. In the colloidal stage the thickened cyst capsule is hyperintense on T1 and hypointense on T2. Cyst contents appear hyperintense on T1 resulting in scolex not being seen, and there is an amount of surrounding edema. If cyst degeneration is present, peripheral ring enhancement may be present.[3,4,16,17] The enzyme-linked immune sorbent assay is more accurate than that of serum: Its sensitivity and specificity being 87% and 95%, respectively.[1]

Currently, the most reliable immunological test is enzyme linked immune electrotransfer blot assay that has 100% specificity for detection of antibodies in serum and cerebrospinal fluid.[18,19] Antigen detection assays permit monitoring and follow-up of antiparasitic treatment.[20] Management includes a combination of cysticidal drugs, steroids, and surgery.[21]

Albendazole is proven to be effective in patients with intramedullary cysticercosis and is the preferred drug compared to praziquantel.[22,23] Corticosteroids are used as adjuncts to the cysticidal therapy to alleviate symptoms due to the inflammatory reaction caused by the death of larvae.[24] Albendazole can be used as monotherapy in the conservative treatment of patients with intramedullary cysticercosis and whose clinical course is stable. The potential advantages of medical therapy alone include avoidance of surgery and treatment of surgically unreachable and multifocal lesions.[4,5,22,25,26]

Surgical treatment is indicated in patients who experience severe and progressive neurological deficit regardless of medical therapy. The excision of extramedullary lesions is often difficult because of the arachnoidal scarring secondary to cyst degeneration, but sharp dissection, gentle irrigation, and valsalva maneuvers may assist in extirpating the adherent cyst.[27]

Conclusion

Intramedullary spinal cysticercosis is a rare clinical entity and a high degree of clinical suspicion is required for diagnosis. MRI and the immunological tests can be conclusive. Medical therapy with close follow-up and in case of progressive neurological deterioration surgical intervention is indicated.

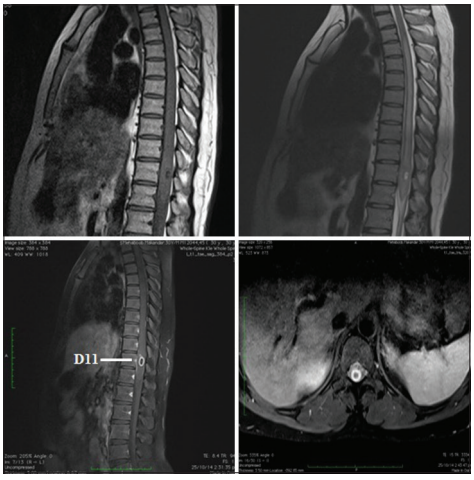

Figure 1: Sagittal and axial magnetic resonance imaging showing T1 hypointense and T2 hyperintense intramedullary lesion at D11 vertebrae of size 1.1 cm × 0.9 cm with the bulky edematous spinal cord from D4 to D12 vertebra. On contrast, there is a ring enhancement of lesion with central hypointensity

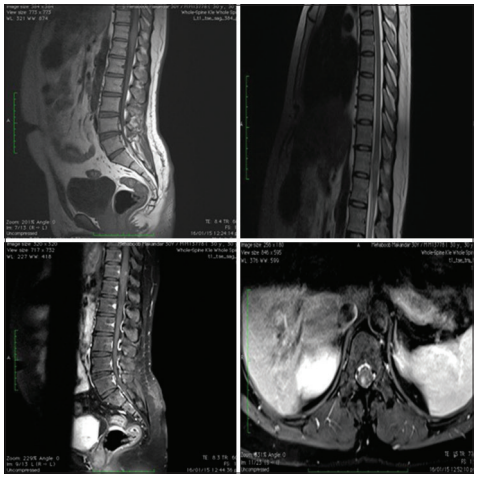

Figure 2: Sagittal and axial magnetic resonance imaging showing T1 hypointense and T2 hyperintense intramedullary lesion at D11 vertebra of size 0.9 cm × 0.2 cm with widening of spinal cord from D10 to D12 vertebra. Mild enhancement of lesion is seen on contrast

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Conflicts of interest

There are no conflict of interest.

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