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**Case Report**

# Cervical spine intramedullary cysticercosis in a young adult - a case report and literature review

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## ABSTRACT

Neurocysticercosis, is the most common central nervous system parasitic infestation worldwide, but spinal involvement by neurocysticercosis is relatively rare. Here we report a case of 18-year-old male patient with intramedullary cysticercosis caused by *Tenia soleum* in cervical spinal cord. MRI revealed expansile illdefined intramedullary mass at C4 and C5 vertebral level which believed to be a tumor instead, rather than a cysticercosis preoperatively. surgery was performed to decompress the spinal cord. Histopathological examination of removed lesion confirmed it as cysticercosis.

**Keywords:** Cervical spine, Cysticercosis, Intramedullary

## INTRODUCTION

Neurocysticercosis, caused by *Taenia solium* is most common parasitic infestation affecting central nervous system. However spinal cysticercosis is rare, representing 1.2% to 5.8% of all cases of neurocysticercosis.[1,2] It can be classified anatomically as extraspinal (vertebral) or intraspinal (epidural, subdural, arachnoid or intramedullary) of which intramedullary type is quite rare.[3-7] We report a case of intramedullary cysticercosis at C4 and C5 level and discussed its diagnosis and treatment with literature review.

## CASE REPORT

A 18 year old male patient referred to MDM Hospital with neck pain and progressive weakness in left upper limb since 20 days. Neurological examination disclosed spastic paresis with decreased motor power of grade 4/5 and increased tendon reflexes in left upper limb with intact sensations. Left Hand grip was weak and Hoffman's sign was positive. Rest limbs had no neurological deficit. Contrast Enhanced MRI spine revealed an expansile ill-defined intramedullary mass of cervical cord centered opposite C4 and C5 vertebral level (presumed to be a tumor), 2.7 cm in length and 10×9mm on Axial images. Lesion was isointense on T1WI and has complex hypointense and hyperintense signals on T2WI.

Post contrast there is moderately intense irregular solid enhancement of tumour with striking cord edema. No such lesion was found at thoracic or lumbar levels. Also, MRI brain screening revealed no abnormalities. Surgery was warranted for progressive neurological detoriation of patient.

The patient underwent C3-C6 laminectomy and underlying dura was opened. spinal cord was found swollen. Midline myelotomy was performed, a greyish white moderately vascular solid like lesion of size about

0.5×1cm attached with spinal cord matter was found. It was removed in toto. postoperative course was uneventful.

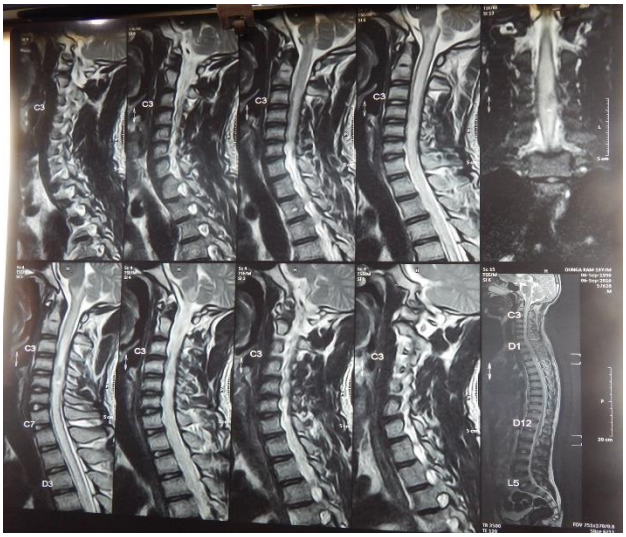


**Figure 1: MRI cervical spine showing intramedullary mass.**

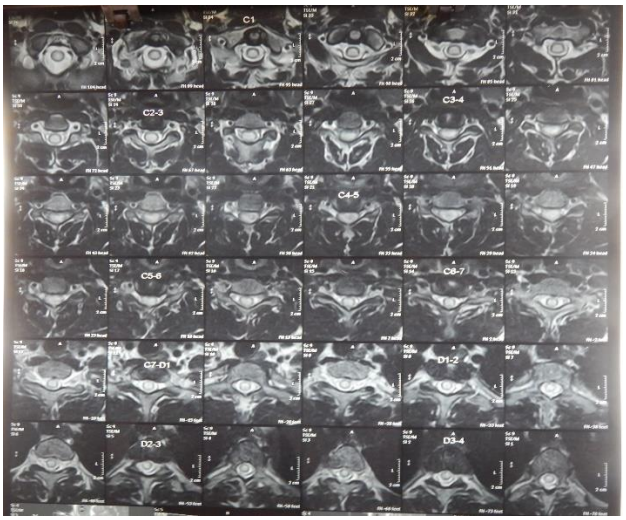


**Figure 2: MRI cervical spine axial view.**

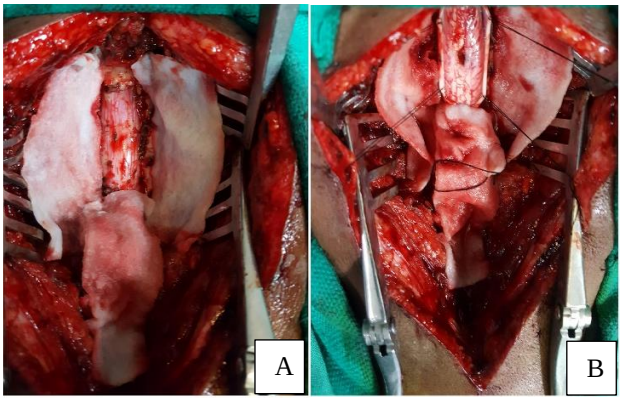


**Figure 3A and B: Intraoperative presentation.**

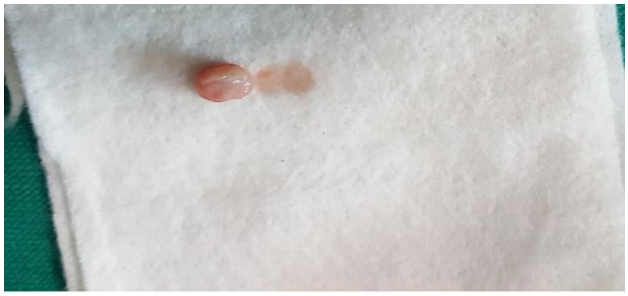

**Figure 4: Excisied neurocysticercosis.**

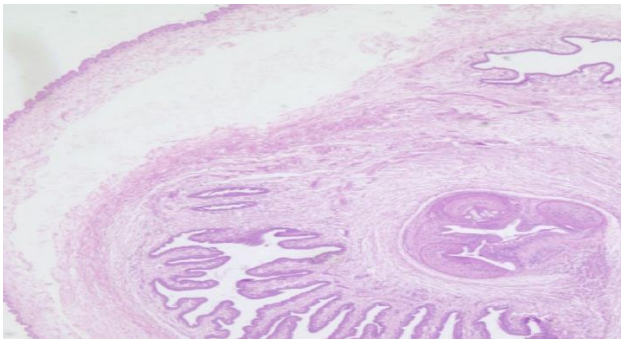

**Figure 5: Histopathology picture of neurocysticercosis.**

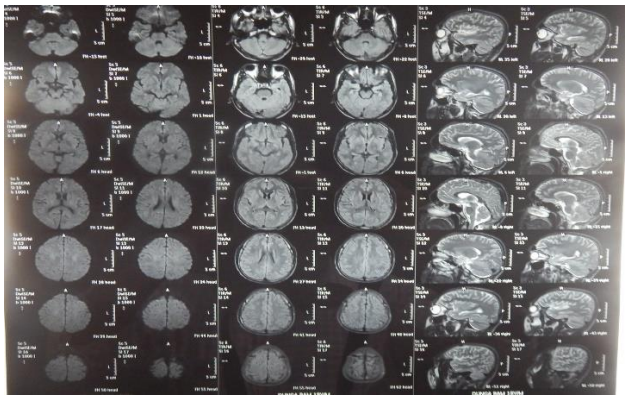

**Figure 6: MRI brain screening.**

Histopathological examination of resected sample showed cyst wall with granulation tissue comprising of dense lymphoplasmacytic mononuclear chronic inflammatory infiltrate, proliferating capillaries, fibrosis and focal necrosis with separately lying larval form of Taenia solium. Postoperatively patients were treated with anticysticercal agents (albendazole- 15 mg/kg/day) and steroids. The patients neurological function postoperatively was not changed from his preoperative status and was discharged on 10$^{th}$ post-operative day with advice for regular follow up.

## DISCUSSION

Cysticercosis is widely endemic in Brazil, Peru, Mexico, Korea, and India.[1,2] Intramedullary cysticercosis often presents in the patients between 20 to 45 years old.[8] Most

patients experienced a progressively worsened course from a week to 10years.[2] The common clinical manifestations included pain, para paresis, spasticity, bowel and bladder incontinence and sexual dysfunction.[2,3] However, inflammatory reaction against the dead parasite is associated with perilesional edema, which can damage medullar parenchyma and therefore, worsen symptoms.[4] Inside the spinal cord, cysticercosis is usually common in Thoracic cord, with a few cases involving the cervical and lumbar cord. This distributional mode of cysticercus supports the hypothesis that intramedullary cysticercus comes from blood circulation, because thoracic cord has much more blood supply than the other parts of spinal cord.[2,9] However, it is also thought that intramedullary cysticercus could migrate to the spinal cord via the ventriculo-ependymal pathway.

On MRI intramedullary cysticercosis usually show a cystic lesion within the spinal cord which of appears hypointense on T1WI with hyperintense scolex identified inside the cyst cavity, hyperintense on T2WI in vesicular stage, a subtle hypointense rim may surround the intramedullary cyst on T2WI. In the colloidal stage the thickened cyst capsule is hyperintense on T1WI and hypointense on the T2WI.Cyst contents appear hyperintense on T1WI resulting in scolex is not seen. There is an amount of surrounding edema. If the cyst degeneration is present peripheral ring enhancement may be present.[3,4,8,10] The differential diagnosis of an intramedullary cystic lesion is extensive, including some other cysts such as arachnoid cyst, ependymal cyst, neuroenteric cyst, sarcoidosis, neoplasms such as ependymoma, and infections such as abcess.[11-15]

If a patient had a history of cysticercosis or comes from an endemic region and MRI reveals a spinal cord lesion, the diagnosis of intramedullary cysticercosis could be suspected and can be verified by the serologic alterations, subcutaneous nodules and changes in the cerebrospinal fluid. The CSF examinations shows increased proteins, a low or normal glucose, moderate lymphocytic pleocytosis and eosinophilia.[16] Cysticercal antibodies found in CSF either by ELISA or in serum by enzyme-linked immunoelectric transfer blot assay have good sensitivity and specificity in cysticercosis diagnosis.[16,17]

As, the patient has no history of neurocysticercosis and was not from an endemic region, it was difficult to clinically suspect intramedullary cystcercosis prior to treatment. The diagnosis of neurocysticercosis was established based on pathological examination. In present case, because of progressive neurological deficit, surgical treatment was good choice for removing mass as it was producing progressive spinal compression and to confirm the diagnosis. Mohanty reported only a 75% satisfactory outcome after surgery and cysticidal treatment.[18]

Early diagnosis and treatment can improve the outcome. Outcomes reported in other series have not been favorable. Sharma et al reported that 60% patients improved after surgery, 25% did not improve, and 15% died.[3] In the reports published in recent years, surgical outcome was significantly improved; no death case and majority of patients could live a life without special support.[3,4,18-20] Surgery is procedure of choice only when diagnosis is in doubt otherwise medical treatment has its advantages. Albendazole is the drug effective in patients with intramedullary cysticercosis since 1996.[21] Preoperative adjunctive treatment with albendazole is thought to be helpful to consolidate the lesion and thus induce a clear plane of Dissection during surgery. Albendazole is normally used postoperatively a regular treatment (15mg/kg/day) for 4 to 6 weeks, according to consideration that cysticercosis is a generalized disease with focal manifestation.

Moreover, Albendazole is often used with corticosteroids, because its blood level could be synergistically increased by the latter.[22] Except for being used after surgery, Albendazole also could be used independently in the conservative treatment for the patients whom are highly suspected as intramedullary cysticercosis and whose clinical courses are stable .The potential advantages of medical therapy alone include avoidance of surgery and treatment of surgically unreachable and multifocal cysticercus.[4,5,10,16,21]

## CONCLUSION

In conclusion, intramedullary cysticercosis represents a diagnostic challenge and neurocysticercosis should be strongly considered for intramedullary lesion, even in a non-endemic area. Surgery is required to facilitate extirpation of the lesion, decompress the cord, confirm the pathological diagnosis and definitive therapy.

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