Solitary Intramedullary Cervical Cysticercosis without Neurological Deficit: A Rare Case Report

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INTRODUCTION

Spinal cysticercosis is an uncommon entity.[1] Majority of the cases are reported in the dorsal spine due to more blood circulation than the other parts of the spinal cord.[2] Spinal intramedullary cysticercosis is rarer than subarachnoid cysticercosis.[1] Hence, intramedullary cervical spine cysticercosis (ICC) is a very rare condition. A very few cases have been reported with neurological involvement in all.[1,3] We are presenting a 6-year-old girl with solitary ICC at the level C4–C6 presented with neck stiffness without neurological deficit, diagnosed by visualization of scolex on magnetic resonance imaging (MRI) and was treated successfully by albendazole for 1 month. Patient remained well till the followup of 2 years.

CASE REPORT

A 6-year-old female child of low socioeconomic status, was referred to Department of Orthopedics with the history of insidious onset stiffness of neck with minimal pain for 1 week. Patient’s parent gave a history of tuberculosis contact, but had no history of trauma, evening increase of temperature, decrease appetite, and significant weight loss. Examination showed no motor or sensory deficit with all reflexes intact. Blood investigations showed normal report except mild eosinophilia. Noncontrast MRI of the neck showed a well-defined intramedullary cystic lesion at C4–C6 vertebral levels, which was hypointense on T1 weighted and hyperintense on T2 weighted images with peripheral, spinal cord edema having an intracystic hypointense on T2 weighted “target” like lesion suggestive of scolex. Screening of whole spine and brain did not show any other lesion [Figure 1a-c]. Fundus examination was performed to rule out increased intracranial pressure. Sonography of abdomen and computed tomography (CT) scan of the chest was also unremarkable. Hence, on the basis of this absolute diagnostic criterion,[4] final diagnosis of solitary ICC was made. As the patient had no neurological deficit, conservative treatment was opted for this patient. Before the start of treatment, serum Ag-ELISA was performed to follow the effectiveness of treatment, and it was found positive. The patient was

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Discussion

Cysticercosis of central nervous system by *Taenia solium* characteristically involves the brain parenchyma, intracranial subarachnoid space, or ventricular system.\[1\] Spinal involvement is usually associated with concomitant cerebral involvement.\[1,3\] Isolated involvement of spine is extremely rare\[3\] with predominantly extramedullary.\[3\] The possible mechanisms of spinal involvement of cysticercosis are migration of the cysticercus through the ventriculo-ependymal pathway and hematogenous dissemination.\[2,3\]

The blood flow to the brain is approximately 100-times more than the spine making the brain more vulnerable for cysticercosis than the spine. In the spine, the thoracic cord has higher blood flow and has reported higher incidence.\[2\] Since limited space in the spinal canal, mass effect of this lesion is poorly tolerated and requires prompt intervention.\[2\] All reported cases of ICC had a neurological deficit, to best of our knowledge, this is the first case of ICC without neurological involvement.

The symptomatology of spinal cysticercosis depends on location, spinal level, lesion size, and the presence or absence of inflammation.\[3,5\] These patients usually present with radiculopathy, paresthesia, paresis, bowel and bladder incontinence, and sensory loss. Our case presented with neck stiffness only with intact neurology.

The absolute criteria to make diagnosis of neurocysticercosis are (1) histological demonstration of the parasite from biopsy of the brain or spinal cord, (2) cystic lesion showing scolex on CT/MRI, and (3) direct visualization of subretinal parasites on fundoscopic examination. Any one of the above criteria is sufficient for the diagnosis.\[6\] In our case, scolex was appreciated on MRI, MRI is a better diagnostic tool than the CT scan, and far more sensitive in picking up the parenchymal lesion. Often what is thought to be a solitary lesion turns out to be one of many such lesions. Another advantage of MRI is the detection of scolex which is often missed on CT scan. It is differentiated from tuberculoma as latter loses signal intensity on T2-weighted.\[6\]

When a patient presenting with a history of cysticercosis or comes from an endemic region and along with MRI features suggestive of cystic lesion, the diagnosis of cysticercosis should always be kept in mind, which should be further strengthened by visualization of scolex and positive serology preferably antibody ELISA either in cerebrospinal fluid or in serum.\[6-8\] Serum level of antigen tends to decrease drastically after the treatment, hence it is a valuable tool to assess the effectiveness of treatment and recurrence.

The rarity of spinal cysticercosis case has precluded the evolution of treatment algorithm as compared to cerebral neurocysticercosis.\[6\] It is agreed that medical management of intramedullary spinal cysticercosis should be considered in patients with no neurological deficit and in cases diagnosed by cerebrospinal fluid assay. However, in patients presenting with acute or progressive neurological deterioration, and in those cases where the diagnosis is in dilemma, surgical removal if possible should be the treatment of choice. Early surgery not only provides sample for early diagnosis, but it also provides recovery before irreversible cord damage accomplished.\[5\] Albendazole has been proved to be effective in the patients with intramedullary cysticercosis.\[7\] Albendazole is often used with corticosteroids because its blood level could be synergistically increased by the latter and also decrease the cord edema that is anticipated after the death of parasite due to the release of inflammatory mediators.\[7\]

It has been demonstrated that monoclonal antibody-based Ag-ELISA is a promising technique to monitor neurocysticercosis patients after treatment and it is much cheaper than CT-scan, particularly for developing countries.\[8\] In this case report, Ag-ELISA was used to monitor the effectiveness of the treatment and was negative after 2 months of treatment and at the latest follow-up.

Conclusion

Spinal cysticercosis should always be kept as a differential diagnosis of the cystic lesion. The diagnosis can be clinched on MRI, and it can be treated successfully by...
albendazole if there is no neurological deficit. Follow-up can be monitored by antigen serology.

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**Conflicts of interest**
There are no conflicts of interest.

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