

Sacral Intradural Cysticercosis Misdiagnosed as Brain Tumor Metastasis

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Spinal intradural cysticercosis is a rare manifestation of neurocysticercosis that may present as an isolated lesion. We report a case of sacral intradural cysticercosis misdiagnosed as a metastasis through cerebrospinal fluid seeding in a 48-year-old patient who underwent ependymoma surgery 3 months ago. We performed S1-2 laminectomy with the total removal of intradural lesion. The cysticercosis was confirmed histologically. The patient was given albendazole with corticosteroid.

KEY WORDS : Neurocysticercosis · Spine · Ependymoma · Metastasis.

Introduction

Neurocysticercosis of the central nervous system is classified as parenchymal type, subarachnoid type, intraventricular type, and spinal type according to their location. Among them, the frequency of spinal type has been reported 1.6~13%²⁾. Spinal cysticercosis occurs mostly in thoracic spinal cord where the blood flow is highest, and less frequently in the cervical spinal cord and the sacral region⁵⁾. We experienced a case of the sacral cysticercosis misdiagnosed as metastasis through cerebrospinal fluid (CSF) seeding in a patient who underwent ependymoma surgery 3 months ago. Here, we report a case with a brief review of the literature.

Case Report

A 25-year-old man admitted primarily for low back pain and both leg radiating pain. He underwent brain tumor surgery 3 months ago and pathological diagnosis was ependymoma (Fig. 1, 2). Any pathological reflex was not detected. We couldn't find any subcutaneous nodule.

On peripheral blood findings, leukocyte count was 8700/mm³ (eosinophil 3%), hemoglobin 12.8mg/dl, and special features were not detected in hematology test. CSF finding showed that erythrocyte 0/mm³, leukocytes 7/mm³ (lymphocytes 71%), protein 100mg/dl, and the elevation of glucose level to

50mg/dl. The result of serum and CSF enzyme-linked immunosorbent assay (ELISA) for the detection of antibody to cysticercosis was negative.

On plain radiographs, calcification was not detected. Special features were not detected. On the magnetic resonance (MR) images of the sacral region, a round mass, 2×3cm in size, from the first to the second sacral vertebra, was detected. The T2-weighted image of the axial view revealed a cystic lesion with the high signal intensity. The band with low signal intensity was detected around the cyst (Fig. 3). Under general anesthesia, the S1-2 laminectomy was performed and subsequently the dura was dissected. During the surgery, a lesion with solid nature rather than cystic was detected. The excision of mass could be performed easily, and the total excision was feasible.

The pathological findings showed fibrosis, local calcification, and chronic inflammation on the wall of the larva (Fig. 4).

The condition of the patient markedly improved at the recent follow up.

Discussion

Neurocysticercosis, the most frequent parasitic disease that invades the central nervous system, is caused by the infection with the encysted larva of taenia solium in humans. Sotelo et al⁸⁾. have reported that the frequency of the spinal type neurocysticercosis was 0.77% in 753 cases of active neurocysticercosis. The spinal type neurocysticercosis is classified as the extraspinal type and the intraspinal type according to the location of the lesion. The extraspinal type neurocysticercosis occurs in the vertebral body. The intraspinal type neurocysticercosis occurs in the epidural, subarachnoid

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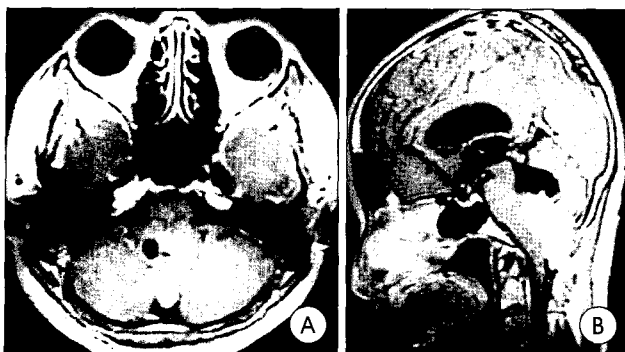


Fig. 1. Brain magnetic resonance images show a 2×3×4cm sized solid tumor mass involving the fourth ventricle.

or intramedullary⁶). Although the most frequent spinal neurocysticercosis is the subarachnoid type, it may occur as the intramedullary or epidural^{1,4}). The subarachnoid type of neurocysticercosis is caused by the invasion of the larvae of cysticercus to the subarachnoid space of spinal cord. The spinal cysticercosis occurs in the thoracic spinal cord where the blood flow is highest in most cases^{2,3,5}). It has been reported that the frequency of the intraspinal type neurocysticercosis is significantly lower than cerebral parenchymal neurocysticercosis because its diameter of the blood vessel is smaller, relatively low blood flow and the structure of the spinal cord is harder than the cerebrum^{1,2,4}). The clinical symptoms are diverse according to the location of the lesion and the degree of edema in the spinal cord. The frequent symptoms are sensory deficit, hypoesthesia, and the abnormality in the sphincter. In the spinal cysticercosis, the neurological abnormality in the spinal cord due to the inflammatory reaction, the cystic effect, and the ischemic change caused by the secretion of cysticercus or its larvae underwent metamorphosis has been reported¹). On plain radiography, the calcification of soft tissues has been rarely detected. The findings of image vary according to the stage of the metamorphosis of cysticercus, its location, its

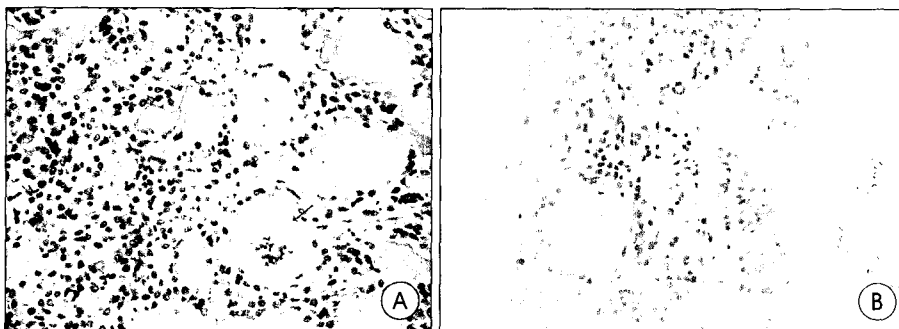


Fig. 2. Photomicrographs of surgical specimen. A : This figure shows hyaline materials(basement membrane). The cells makes up the round appearance called pseudorosette(black arrow). Also, this figure reveals many microcyst. B : This figure shows microcyst and round aggregated cells, and also reveals the hyalinization at vessel walls. A and B : (H&E, ×100).

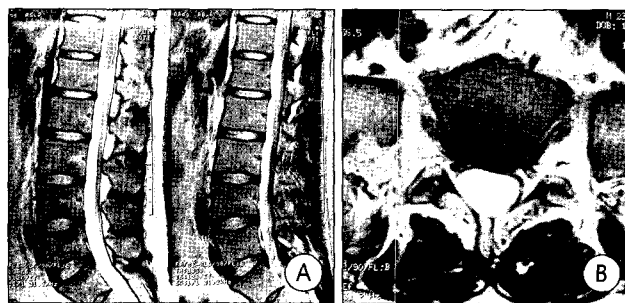


Fig. 3. Lumbar spine magnetic resonance images show a 2.5×3×4cm sized in the dural cystic mass at the level to S1 and S2.

number, and the size. However, MR imaging is the most important test that shows the cystic lesions filled with fluid of which intensity is similar to the CSF.

On T2-weighted imaging, cystic lesions with high intensity, the band with low intensity around the cysts, and the edema of the spinal cord with high intensity have been detected⁵. Upon injection of contrast dye, round or knot-shaped lesions with increased intensity in the vicinity of the low intensity area are detected. If cysticercus were alive, the cystic fluid is clear.

If cysticercus undergone the metamorphosis, the edema around the lesions as well as the enhanced intensity due to host inflammatory reaction are detected⁵). However, it is difficult to make an accurate diagnosis only by the findings of MR image and clinical examination, particularly in patients with suspicious metastasis through CSF seeding after surgery as in our case.

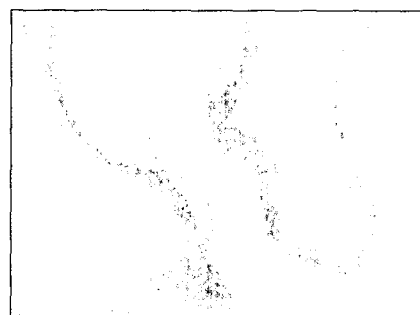


Fig. 4. Microscopic finding of the wall of larva cyst with chronic inflammatory cell infiltration(H&E, ×400).

In the preoperative detection of cysticercosis, the various accuracies of enzyme-linked immunoelectrophoresis transfer reaction test and ELISA has been reported⁷). In our case, the serum and CSF ELISA test was negative. In the treatment of spinal type neurocysticercosis, the choice of treatment is the wide laminectomy with the removal of the offending cyst. As neurocysticercosis is a myriad of different neural lesions caused by the same

parasite, chemotherapy for cysticercus must be applied in the stage of preoperatively as well as postoperatively. Particularly, as inflammation and fibrosis occur in the area around cysticercus and consequently the spinal cord injury may occur during the removal of cysticercus, simultaneous administration of albendazole and dexamethasone is required.

Conclusion

We experienced a rare case of the spinal neurocysticercosis misdiagnosed as metastasis through CSF seeding.

Although spinal neurocysticercosis is rare, it must be included among other spinal cystic lesion. And in case of cysticercosis, chemotherapy must be applied preoperatively as well as postoperatively.

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