Spinal Intramedullary Ependymal Cyst

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The authors report a case of intramedullary ependymal cyst at the level of conus medullares in 44-year-old man. The patient was admitted to our hospital due to progressing both lower extremities weakness and radiating pain for 6 months. Magnetic resonance (MR) imaging showed intramedullary cystic mass at the level of conus which compressed spinal cord. The patient underwent partial removal and made cyst to communicate with subarachnoid space. The histologic finding was ependymal cell cyst. After surgery the patient had symptomatic improvement and in follow-up MR image cyst regressed in size.

KEY WORDS: Ependymal cyst · Conus medullares.

Introduction

Intradural spinal ependymal cysts comprise 0.4% of all primary spinal tumors. Spinal intramedullary ependymal cysts are extremely rare and pathologically proven cases are scarce in the literature. We report a case of intramedullary ependymal cyst developed in conus medullares and discuss the pathological finding, radiological finding, surgical management of spinal intramedullary ependymal cysts.

Case Report

A 44-year old man presented with 6 months history of aggravating motor weakness and both lower extremities radiating pain. He could not walk without assistance. On neurologic examination, there was increased deep tendon reflex and positive Babinski sign. Plain X-ray and lumbar computed tomography (CT) have no abnormality like bony erosion. Spine magnetic resonance (MR) imaging showed 25 × 15 mm-sized oval cystic lesion at conus medullares which was well-demarcated from ballooned spinal cord and isointense with CSF in T1, T2-weighted image with no enhancement on gadolinium diethylene triamine pentaacetic acid (Gd-DTPA)-enhanced MR image (Fig. 1). Cervical and thoracic MR image showed no abnormality. Surgery and outcome: The patient was placed on operating table in prone position. T12, L1 partial laminectomy was done. As dura was incised spinal cord was expanded and transparent cyst wall was noted. There was no adherence with dura. We could not find cleavage line between cyst and spinal cord. After cystic fluid was aspirated with syringe small window was made on cystic wall to communicate with subarachnoid space. Immediate postoperative MR image showed reduced cyst in size. 6 month postoperative MR image showed more regression in size (Fig. 1). After surgery, motor weakness of lower extremities was improved gradually. He could walk by himself at discharge. The patient has no neurological deterioration 9 months after the operation. Pathologic finding: The histopathological examination showed that cystic wall consisted of a layer of cuboidal cell with underlying neuroglial....
matrix. There was no basement membrane. This finding was consistent with pathologic finding of ependymal cyst in the literature (Fig. 2). Immunocytochemical study showed negativity for glial fibrillary acidic protein (GFAP) and S-100 protein.

**Discussion**

Several cases of spinal intramedullary ependymal cysts have been reported with pathological study. Patients were from pediatric to adult in reported cases. Predilection sites of spinal ependymal cyst were most common in thoracic spine. Histological Characteristics: Different varieties of developmental intradural cysts of spinal cord include neuroenteric cyst, teratomatous cyst, bronchiogenic cyst, arachnoid cyst, epithelial cyst, colloid cyst, and ependymal cyst. Generally characteristic features of ependymal cyst are lining with simple columnar or cuboidal epithelium and absence of basement membrane. No mucinous production or glycoprotein can be detected by periodic acid-Schiff, alcian blue, mucicarmine staining. Immunocytochemical stain can be useful in differential diagnosis of cystic lesions. Wackym, et al. reported a spinal ependymal cyst which showed positivity for cytokeratin antibody reaction and negativity for glial fibrillary acidic protein and S-100. Electron microscopy can characterize ependymal cysts as intercellular junction complexes, the absence of a basement membrane, membrane-bound granules in nonciliated cells, and absence of a coating on the luminal surface of the cells. Hypothesis of genesis of spinal ependymal cyst is that floor plate of the neural tube is evaginated on the ventral side and isolated to form a cyst. This explanation may explain the presence of an ependymal cyst on the anterior side of the spinal cord.

Presentations: The clinical presentation of the reported cases of intramedullary ependymal cyst were progressive weakness, back ache, radicular pain, chronic abdominal pain, sudden motor loss after lumbar puncture and etc. although it depended on location.

Investigations: MRI is most useful study to diagnose intramedullary cystic lesion. The MRI characteristics of spinal ependymal cyst is a well-circumscribed, homogeneous intramedullary lesion, the contents of which are isointense with CSF on T1- and T2-weighted and proton density images. On Gd-DTPA enhanced MR image shows no uptake of the contrast medium. Follow-up MRI study should be done after operation because there was possibility of recurrence. Plain X-ray films do not provide any clues to the diagnosis of ependymal cyst but can be useful to differential diagnosis of teratomatous, and dermoid/epidermoid cysts which may show pedicle flattening and scalloping of vertebral bodies.

Treatment: When spinal ependymal cyst is symptomatic surgical treatment is choice.

Total removal of cyst is usually impossible because there is no cleavage line between cyst and spinal cord. The aim of surgery should be to create communication between the cystic cavity and the subarachnoid space and to undertake a biopsy of cystic wall. Although Rhee, et al. report recurrence of cyst fenestration or marsupialization is most safe surgical method. Some authors reported cystosubarachnoid shunt.

**Conclusion**

The authors experienced a rare case of spinal intramedullary ependymal cyst. We emphasizes again total removal of intramedullary ependymal cyst was escaped to prevent serious complications.

**References**