Cervical spinal bronchogenic cyst: a case report and literature Review

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Abstract

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Case report

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Conflicts of interest

The authors declare that they have no conflict of interest.

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Consent for Publication

Written informed consent was obtained from the patient to publish this report in accordance with the journal's patient consent policy

Cervical spinal bronchogenic cyst: a case report and literature

Review

Abstract:Bronchogenic cysts are one of the subtypes of congenital cysts, which are extremely rare in the spinal canal. We report a case of a 19-year-old woman,with complaints of neck and shoulder pain with numbness in her hands and weakness in her right extremity. The magnetic resonance imaging of the cervical spinal revealed a cystic lesion from C4 to C5 vertebral levels. Finally, after surgical resection, the case was

diagnosed as a bronchogenic cyst. By reviewing the literature, it is found that only less than 30 cases have been reported so far.

Clinical message:A case of a 19-year-old woman,with complaints of neck and shoulder pain with numbness in her hands and weakness in her right extremity. The MRI of the cervical spinal revealed a cystic lesion from C4 to C5 vertebral levels. Postoperative histopathologocal examination suggested it is a bronchogenic cyst

Key words:spinal bronchogenic;Cervical;Extramedullary;Neurosurgery, Spinal lesion

Bronchogenic cysts are congenital cystic lesions originating from endoderm, dominated by pseudostratified ciliated columnar epithelium.It often occurs in the mediastinum, but rarely occurs in the spinal canal.[1] The symptoms of intraspinal bronchogenic cysts are mainly compression symptoms, mainly pain, numbness, limb weakness,and even hemiplegia.[2] Because it is a benign lesion, surgical resection can have an ideal prognosis.

1. History and Physical Examination: The patient was a 19-year-old female who complained of neck and shoulder pain for 3 months, numbness in both hands,and right limb weakness for 1.5 months. The patient's neck pain was needle-like pain, with numbness in both hands and a decrease in pain and temperature sensation. The muscle strength of the right upper limb was grade 4, the lower limb was grade 3(Code Muscle Strength Grade), and the muscle strength of the left limb was normal.
2. Radiological findings:Preoperative CT found a low-density foci in the spinal canal at the C4-C5 level. The CT value was about 23HU, the largest cross-sectional area was about 11mm*19mm, and the shape was irregular. The lesion was hypointense on T1 and hyperintense on T2 images(Figure1-2).
3. We performed a lesion resection under electrophysiological monitoring on our patient. During the operation, the tumor was seen as a gray-white cyst with a complete capsule and black dot-like substances on the cyst wall. When we open the cyst wall, we can see the clear fluid flowing out, We completely removed the cyst wall during the operation. Electrophysiology monitoring suggests that the electrical activity of the right limb is improved after the resection of the lesion. Histopathologocal examination showed the cyst was lined by ciliated columnar epithelium, suggestive of a bronchogenic cyst(Figure4).
4. After the operation, the patient's muscle strength returned to normal, the symptoms of neck and shoulder pain were significantly relieved, and the numbness in the left hand improved after about 1 week. Postoperative MR (Figure3)and CT showed no residual cyst. After the patient was discharged from the hospital, we followed up with the patient regularly, and the patient did not have similar symptoms again.After 3 months we performed an MRI on the patient, the MRI shows that there is no spinal cord edema, hemorrhage or recurrence of the cyst after operation. Discussion According to WHO, a bronchogenic cyst is an endogenous cyst whose contents are the epithelium of the respiratory tract.[3] Bronchogenic cysts account for 0.5% of cystic lesions in the spinal canal. The origin of a bronchogenic cyst is not completely known, but this pathological entity has been proposed to result from three hypotheses during embryogenesis.[4]At first, it is assumed that the endoderm and ectoderm do not separate completely during differentiation of the inner cell mass. Secondly, the cyst is considered to originate from the ectoderm because of its potential to form the endoderm and paraxial mesoderm. Lastly, it is attributed to the split notochord syndrome which can explain the ectopic bronchogenic cyst. When the duplication or separation of the notochord is incomplete, ectopic cysts are generated.[5]As a benign lesion, the symptoms of intraspinal bronchogenic cysts are mainly pain, limb weakness, paresthesia, abnormal urine and stool,and other placeholder effects. Symptoms are exacerbated when the cyst ruptures, becomes infected, increases in size, or is traumatized.[6] The most commonly seen characteristic on MRI is homogeneous isointense or hypointense lesions on T1WI, hyperintense lesions on T2WI, and noncontrast-enhancing lesions after intravenous contrast injection. Clinicians should differentiate IEBCs from the following diseases: (1) Spinal arachnoid cysts are more commonly found in the dorsal part of the thoracic spinal canal. They show similar signals to cerebral spinal fluid on all MRI sequences. (2) Spinal epidermoid cysts mostly occur in the lumbosacral region. MRI can show various intensities due to different proportions of liquid within the lesion. Hyperintensity on diffusion-weighted imaging is helpful for differentiating spinal epidermoid cysts from other cystic lesions. (3)

Spinal mature cystic teratomas are more common in children and adolescents and have no special imaging characteristics. The final diagnosis depends on the postoperative pathology. [7]Wilkins and Odom suggested three histological categories based on microscopic features. Category A-simple cyst lined by epithelium on a basement membrane with a thin wall of connective tissue.Category B-cyst lined by epithelium with a wall containing tissues found along the gastrointestinal tract or tracheobrochial tree.Category C-cyst lined by epithelium with a wall containing ependymal and glial tissues as an intrinsic part of the lesion.[8]

The treatment of SBC is mainly based on surgical resection.[9]For the SBC on the dorsal side of the spinal cord, it can be completely removed. For cysts located on the ventral side of the spinal cord, when the cyst wall and surrounding tissues are seriously adhered, the focus should be on protecting the spinal cord. Subtotal resection is also accepted.[10]According to literature reports: the recurrence rate of subtotal resection is about 11.6%. [11]As benign lesions, surgical resection can often significantly improve symptoms and obtain a good prognosis. Therefore, early detection and early surgical resection are of great significance for prognosis.

Figure1:(A):Preoperative magnetic resonance imaging sagittal sections,showing a hypointense on TWI1 and hyperintense on T2WI lesion.

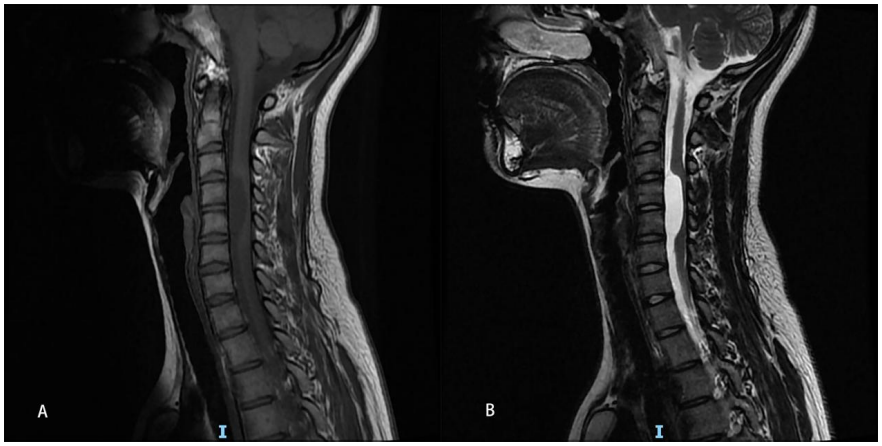


Figure2:Preoperative magnetic resonance imaging axial section,showing a intradural extramedullary lesion at C4-5 level.

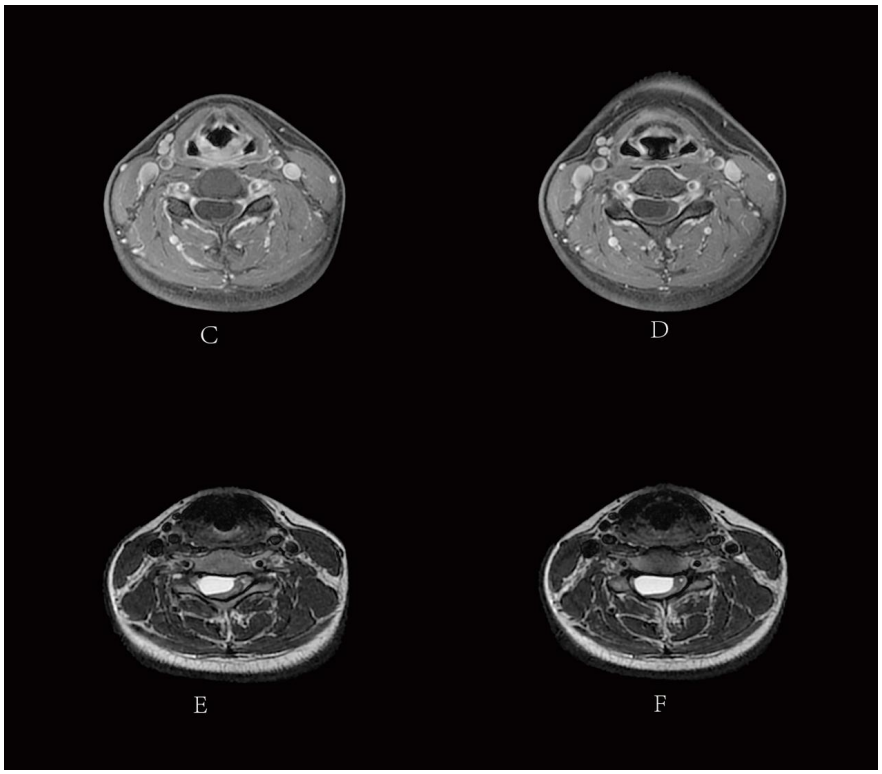


Figure3:Postoperative 1 month MRI,MRI reflects a small postoperative point of spinal cord injury(A-B). Postoperative 3 month MRI shows no injury(C-D).

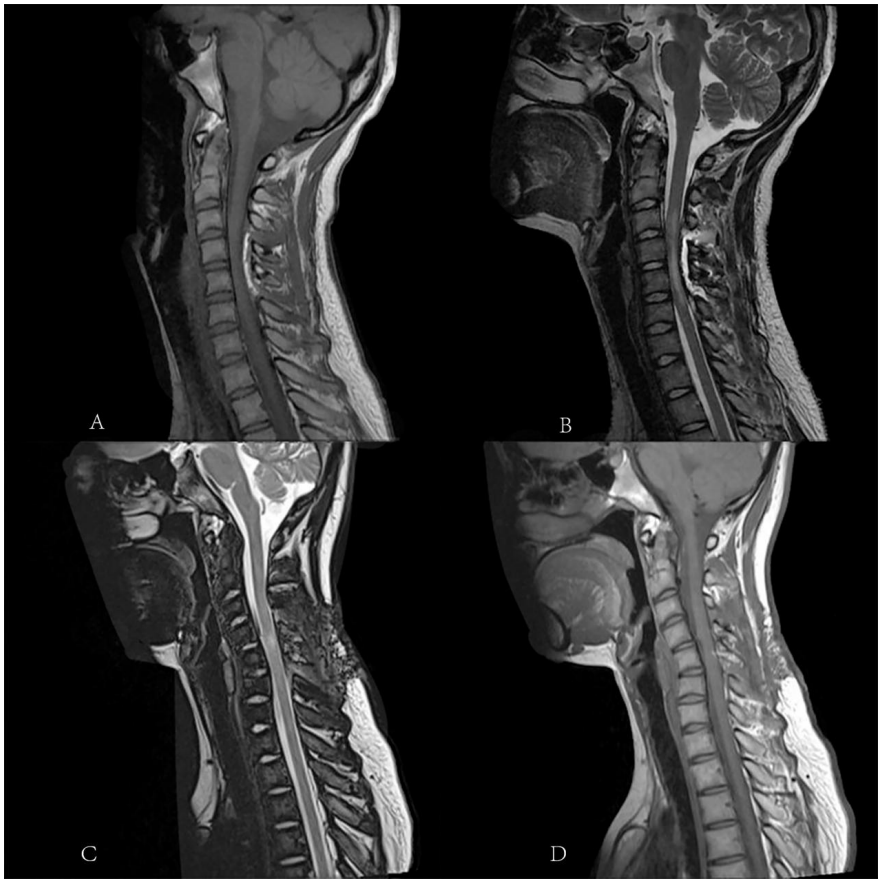
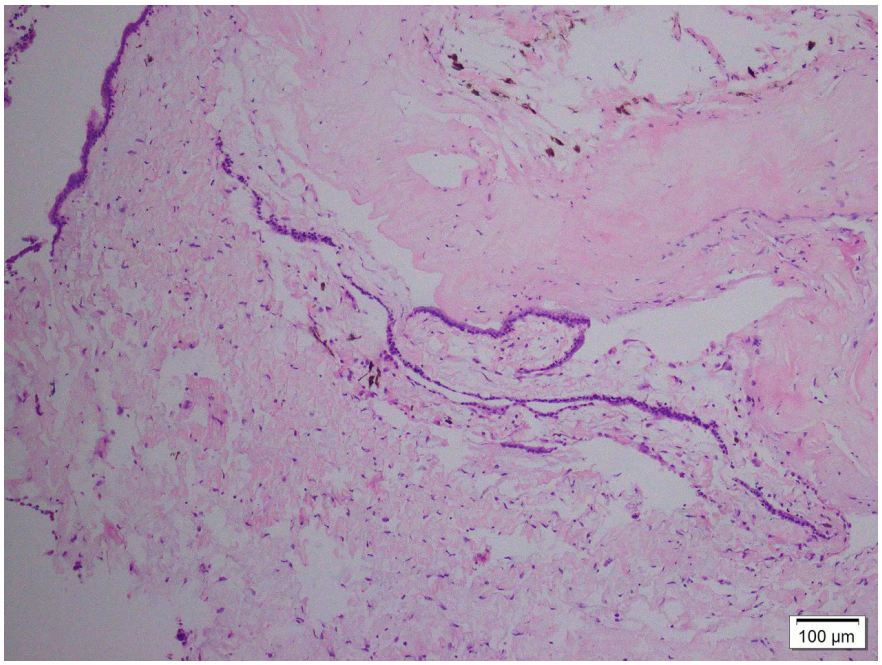


Figure4:Postoperative histopathologocal examination showed cyst was lined by ciliated columnar epithelium,suggestive of a bronchogenic cyst.



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