A Degenerative Intraspinal Cyst Mimicking a Nerve Root: A Case Report on an Intraoperative Challenge

Hyeun Sung Kim¹, Ravindra Singh¹, Nitin Maruti Adsul², Osama Nezar Kashlan³, Bong Choon Choi⁴, Sung Woon Oh¹, Jung Hoon Noh¹, Chang Hwan Park⁵, Il Tae Jang¹, Seong Hoon Oh⁶

¹Department of Neurosurgery, Nanoori Gangnam Hospital, Seoul, Korea, ²Department of Ortho-spine Surgery, Sir Ganga Ram Hospital, Delhi, India, ³Department of Neurosurgery, University of Michigan, USA, ⁴Department of Pain Center, Seiyeon Pain Clinic, Seoul, Korea, ⁵Medical School, University of Debrecen, Hungary, ⁶Department of Neurosurgery, Nanoori Incheon Hospital, Incheon, Korea

Corresponding Author:
Hyeun Sung Kim, MD, PhD
Department of Neurosurgery, Nanoori Hospital, 731, Eonju-ro, Gangnam-gu, Seoul 06048, Korea
Tel: +82-2-6003-9767
Fax: +82-2-3445-9755
E-mail: neurospinekim@gmail.com

Received: December 3, 2018
Revised: May 4, 2019
Accepted: May 14, 2019

INTRODUCTION

Many case reports of various types of degenerative cysts are available3,4,7). These cysts can surprise surgeons with their appearance and place a diagnostic challenge both preoperatively and intraoperatively. We report a case of degenerative intraspinal cyst with severe adhesion to dura, which mimicked a nerve root and created a diagnostic dilemma during surgery.

CASE DESCRIPTION

A 60-year-old man presented to our clinic with insidious onset, gradually progressive lower back pain, right leg pain and neurological claudication of six months duration. The pain was radiating to the right S1 dermatome, Visual analogue score (VAS) for pain was 8.

On examination, patient had a positive straight leg raise test at 45 degrees on the right side. His sensation diminished on the right L5 and S1 dermatomes. However, the patient had no motor weakness.

Magnetic resonance imaging (MRI) of the patient showed a large cystic lesion at right L5-S1 level. The cyst was compressing the dural sac and traversing right S1 root at L5-S1 level. The lesion was isointense on T1-weighted images and hyperintense on T2-weighted images (Fig. 1).

Various intraspinal cysts have been described in the literature. Sometimes, these cysts are difficult to recognize intraoperatively and can place a surgeon in dilemma. We report a case of a degenerative intraspinal cyst with severe adhesion with dura, which was mimicking as a nerve root and posed a diagnostic dilemma during surgery. A sixty-year-old man presented with insidious onset, gradually progressing lower back pain, right leg pain and neurological claudication of six months duration. The pain radiated to the right S1 dermatome, Right side straight leg raise test was positive at 45°. Sensations were diminished over the right L5 and S1 dermatomes. Motor function was normal, MRI showed a large cystic lesion at right L5-S1 level. The cyst appeared to compress the dural sac and traversing right S1 root at L5-S1 level. The lesion was isointense on T1-weighted image and hyperintense on T2-weighted image. While treating this condition using the uniporal full endoscopic technique the cyst appeared as nerve root. Meticulous dissection was required to separate the cyst from neural structures. Histology confirmed the diagnosis of a degenerative intraspinal cyst. The patient had significant improvement after surgery and at six months follow up he was completely asymptomatic. Various cysts can occur in the intraspinal canal, and careful attention should be paid to minimize the nerve injury in the presence of severe adhesions.

Key Words: Cysts, Spinal nerve root, Dura, Adhesions, Endoscopy

Fig. 1. Pre-operative MRI image showing cystic lesion in sagittal Ⓐ and Ⓑ axial images.
A diagnosis of right sided intraspinal cyst at L5-S1 level with neurological compromise was made.

The patient was treated at our hospital using uniportal full endoscopic technique. Intraoperatively, the cyst appeared as nerve root and due to adhesions between dura and cyst meticulous dissection was required to identify and separate the cyst from neural structures (Fig. 2 & Video). Patient’s symptoms improved significantly after surgery and visual analogue score (VAS) of the patient was 2. At six months follow up he was faring well and asymptomatic. Histology confirmed the diagnosis of degenerative intraspinal cyst (Fig. 3). Post-operative MRI showed removal of the cyst and decompression (Fig. 4).

**DISCUSSION**

In the literature, various types of cysts have been described in the lumbar canal\(^4,\)\(^5,\)\(^6,\)\(^7\). These cysts are classified according to anatomical location (such as facet cysts or ligamentum flavum cysts) or pathology (such as synovial or ganglion cysts)\(^1,\)\(^3,\)\(^9\). Usual presentation of the spinal canal cysts are low back pain, claudication, radicular pain, motor weakness, dysasthesia all of which are secondary to the compression of the neural elements or narrowing of the canal\(^2,\)\(^4,\)\(^7\). Neuroimaging modalities like myelography, computed tomography and MRI are helpful in the diagnosis of the spinal canal cysts\(^1,\)\(^7\). Fibrous, collagenous and myxoid degeneration may be found on histological studies. In addition chronic granulomatous tissue, calcification, hemosiderin deposits may also be present\(^2,\)\(^4,\)\(^7\). Histopathology in our case confirmed degenerative intraspinal cyst.

Surgical excision followed by histopathological studies is the preferred treatment\(^4,\)\(^7\). We performed the excision of the cyst with uniportal full endoscopic technique. Intraoperatively, we found a structure in right lateral recess which appeared as a nerve root and on further dissection came out to be the cyst we were looking for (Fig. 2 & Video 1). We used full endoscopic approach in this patient because interlaminar approach endoscopic surgery has already been established as a surgical option for spinal stenosis\(^5\). For that reason we decided to excise the cyst with full endoscopic surgery but due to adhesions the task became difficult as described above. We used interlaminar PESLD (Percutaneous Endoscopic Stenosis Lumbar Decompression) method described first by Kim et al.\(^3\). With meticulous dissection using probe we confirmed that the structure appearing as root actually was a cyst. Careful dissection through
adhesions was the key to success of the full endoscopic removal of the cyst.

As can be seen from this report, a cyst appearing as a nerve root is a diagnostic dilemma and surgical challenge. In endoscopic surgery utmost care is needed to recognize the neural and other vital elements lest they get violated inadvertently during the procedure.

CONCLUSION

It is not common for a cystic lesion to masquerade as nerve root. However, such a situation is a dilemma to the surgeon and poses a surgical challenge to identify the lesion correctly and save neural and other important structures. Furthermore, this case report opens another dimension to the surgical management of the intraspinal cyst with the usual advantages of the minimally invasive solution like interlaminar approach percutaneous full endoscopic lumbar stenosis lumbar decompression (PESLD).

ACKNOWLEDGEMENT

We would like to acknowledge scientific team members Ms. Jae Eun Park, Mr. Kyeong-rae Kim and Mr. Sang Hyuck Yoon for providing assistance in acquiring full text articles and managing digital works.

REFERENCES