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Case Report

Synovial cyst at the intervertebral foramina causing lumbar radiculopathy

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Objective: To determine the presence of intraforaminal synovial cysts resulting in nerve root compression.
Methods: A 26 year old man presenting with left leg pain was admitted. He had no motor, sensory, or reflex changes. Magnetic resonance imaging (MRI) and MRI-myelography showed an intra and extra foraminal, extradural, cystic lesion at L4 vertebra on the left side.
Results: At surgery there was a cystic mass pressing on the nerve root, and no connection or communication with the dural structures could be found.
Conclusion: Synovial cysts are uncommon extradural degenerative lesions. Intraspinal synovial cysts occur most often at the L4-5 level, but they have been reported in all areas of the spine except the intraforaminal region and the sacrum.
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Keywords: intraspinal synovial cysts; foramina; leg pain

Introduction

Cystic lesions within the lumbosacral spinal canal can cause symptoms and signs such as radiculopathy. These cysts include ganglion and synovial cysts. Although intraspinal synovial cysts occur most often at the L4-5 level, they have been reported in all areas of the spine except the intraforaminal region and the sacrum.

Case report

A man aged 26 years presented with left leg pain, of approximately 3-month duration. Straight leg-raising test was positive on the left at 40°. There were no motor, sensory, or reflex changes.

Magnetic resonance imaging (MRI) showed an intra and extra foraminal, extradural, space-occupying lesion at the level of L4 vertebra on the left side. MRI-myelography also showed that this lesion was cystic and isointense with cerebrospinal fluid (Figures 1–4). Before (and after) surgery, the patient carried out a rehabilitation programme in order to improve spinal and pelvic muscle strength. The patient underwent left hemipartial laminectomy of L4 and L5. A cystic mass was identified laterally which was pressing against the root at the L4-5 level. With the use of the operating microscope the cyst was dissected free, and no connection or communication with the dural structures could be found. There was a separation between the articular processes. It was thought that this probably represented a synovial cyst arising from the facet joints and projecting intraforaminally. The L5 root could be visualized after the cystic tumor was removed in its entirety.

During surgery, a liquid-containing cystic lesion was found at L4-5 intraforaminal level. The specimen was oval in shape and measured 10 mm in diameter. Pathological analysis revealed syconium covering fibrous connective tissue. The mass was diagnosed histologically as a synovial cyst.

The patient was mobilized 1 day after surgery without leg pain. He was completely well at the latest follow-up visit, 2 months after surgery, showing no recurrence of the cyst on MRI studies.

Discussion

Synovial cysts are uncommon extradural degenerative lesions. The proposed pathogenesis of synovial cysts includes rupture of the synovial membrane with extrusion of fluid and cells, nonspecific proliferation of mesenchymal cells, myxoid degeneration in collagen

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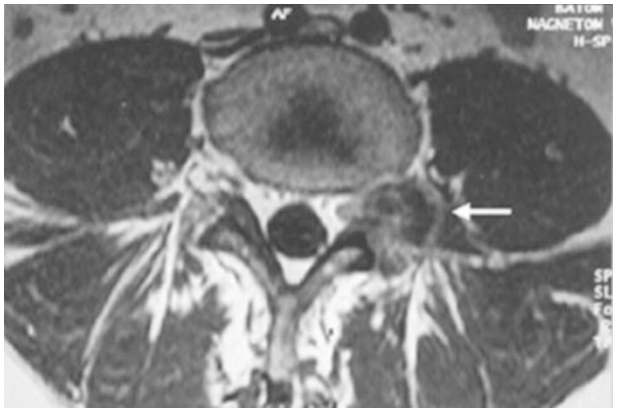
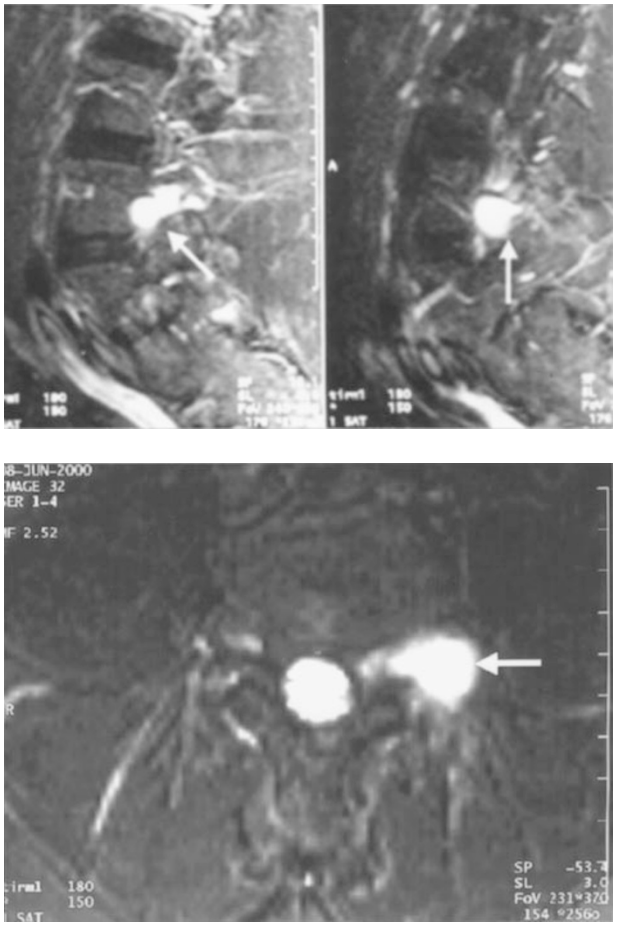


Figure 1 Magnetic resonance image (TR 576 msec, TE 14 msec) at the L4-5 level, axial projection, without gadolinium infusion, demonstrating the synovial cyst in the left intervertebral foramina. There is an expansion at the foramina

Figure 4 Magnetic resonance image T1 and T2 weighted sections at the L4-5 level, sagittal projections, demonstrating the synovial cyst in the left intervertebral foramina. There is a degenerative expansion at the foramina



Figures 2 and 3 Magnetic resonance myelography of the lumbar spine, sagittal and axial projections demonstrating the cyst in the left intervertebral foramina without relationship to the subarachnoid space

connective tissue, and increased production of hyaluronic acid by fibroblasts.[1]

Although predominantly found in the extremities, synovial cysts can arise from any synovium-lined joint or tendon sheath. The L4-5 spinal level is typically involved, and the adjacent facet joints reveal characteristic alterations of osteoarthritis.[2]

Synovial cysts must be differentiated from other spinal epidural cysts, including ligamentum flavum cysts, arachnoid cyst, perineural or Tarlov's cysts, interspinous ligament ganglion cysts, and pigmented villonodular synovitis.

Most patients with symptomatic synovial cysts of the lumbar spine present with radicular pain, but not neurological deficits. In addition to radiculopathy, patients may suffer from neurogenic claudication if the cyst becomes large enough to compromise the diameter of the spinal canal significantly.[3–5] In our patients, there was unilateral neurogenic claudication, especially after long periods of standing and walking.

Radiologically, synovial cysts may be recognized by their characteristic appearance on MRI or MR-myelography. Magnetic resonance imaging reveals a well-defined mass with variable intensity on T_1-weighted and hyperintensity on T_2-weighted images; the contours of the mass may enhance after injection of gadolinium. The cyst has variety of MR imaging signal intensities, presumably due, at least in part, to the variable cyst contents including hemorrhage of different ages.[6–8]

Prompt recognition of this condition may allow definitive surgical treatment in time to prevent irreversible neurological deficits. If the diagnosis is made preoperatively, decompressive surgery may be achieved using a minimally invasive microsurgical approach, as for microdiscectomy.[9,10]

A review of the literature reveals no reported case of intraforaminal cyst. In our patient, the cyst was

diagnosed by MRI and MR-myelography and the diagnosis confirmed by surgery.

Conclusions

Intraspinal synovial cysts are uncommon lesions that are associated with degenerative disease of the spine. A synovial cyst should be considered in the differential diagnosis of a mass in the intervertebral foramina causing lumbar radiculopathy.

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