



(CASE REPORT)



PRIMARY SPINAL EPIDURAL HYDATID CYST: A CASE REPORT

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ABSTRACT

This educational case report designed to illustrate the imaging approach to primary spinal epidural hydatid cyst. The synthetic radiological figure demonstrates representative appearances rather than actual patient imaging. Imaging findings, differential diagnosis and limitations are discussed to support structured radiological interpretation.

Keywords: Hydatid Disease; Spinal Epidural Cyst; MRI; Spinal Compression.

1 INTRODUCTION

Primary spinal epidural hydatid cyst presents diagnostic challenges because imaging findings may overlap with more common conditions. Cross-sectional imaging is important for identifying lesion origin, defining anatomical relationships and guiding subsequent evaluation.

2 CASE REPORT

A 35-year-old male patient with no significant previous medical or surgical history was admitted to our department with progressively worsening low back pain associated with bilateral lower-limb paresthesia. The symptoms had developed insidiously over approximately four months, initially presenting as intermittent lumbar discomfort before progressing to persistent pain with occasional radiation toward both lower extremities. The patient reported increasing difficulty with prolonged standing and walking, accompanied by a sensation of numbness and tingling predominantly affecting the posterior aspects of the lower limbs.

The patient denied any recent spinal trauma, fever, unexplained weight loss, or previous spinal surgery. No history of malignancy or chronic inflammatory disease was reported. On physical examination, the patient was conscious, afebrile, and hemodynamically stable. Neurological examination revealed mild bilateral lower-limb weakness, predominantly affecting distal muscle groups, associated with decreased sensation in the lumbosacral dermatomes. Deep tendon reflexes were slightly diminished, while no significant sphincter dysfunction was identified.

Given the progressive neurological manifestations and persistent lumbar pain, magnetic resonance imaging (MRI) of the lumbar spine was performed to investigate a possible compressive spinal lesion.

MRI was performed using sagittal and axial T1-weighted, T2-weighted, and short tau inversion recovery (STIR) sequences, supplemented by post-contrast T1-weighted fat-suppressed acquisitions following intravenous gadolinium administration.

The examination revealed a well-circumscribed, multiloculated cystic lesion located within the posterior epidural compartment of the lumbar spinal canal, extending approximately from the L3 to L5 vertebral levels. The lesion occupied a substantial portion of the spinal canal and produced marked mass effect on the adjacent dural sac, resulting in significant narrowing of the spinal canal and compression of the cauda equina nerve roots.

On sagittal T1-weighted images, the lesion demonstrated predominantly homogeneous low signal intensity, similar to that of cerebrospinal fluid. Multiple thin internal septations were identified, separating the lesion into several rounded and oval cystic compartments of variable sizes.

On T2-weighted sequences, the cystic components appeared markedly hyperintense, with thin hypointense walls and internal septations. The multiloculated architecture was particularly evident on sagittal and axial T2-weighted images, demonstrating several closely apposed daughter cyst-like structures within the epidural space.

The lesion displayed a smooth, expansile configuration, displacing the dural sac anteriorly and producing compression of the adjacent neural structures. Despite the significant degree of spinal canal narrowing, the lesion maintained relatively regular external contours without evidence of aggressive infiltration into the surrounding paraspinal soft tissues.

On STIR sequences, the cystic components remained hyperintense, confirming their fluid-rich nature. No substantial surrounding bone marrow edema or inflammatory changes were observed.

Following intravenous administration of gadolinium, the lesion demonstrated no significant enhancement of its internal cystic components. Minimal peripheral enhancement of the cyst walls and thin internal septations was observed, without any enhancing solid tissue component or mural nodule.

The absence of a substantial enhancing solid component, together with the multiloculated cystic morphology and cerebrospinal fluid-like signal characteristics, favored a benign-appearing cystic process rather than a solid epidural neoplasm.

Axial T2-weighted images demonstrated severe narrowing of the spinal canal, with anterior displacement and flattening of the dural sac. The cauda equina nerve roots appeared crowded and compressed at the level of maximal stenosis. The lesion extended longitudinally along the posterior epidural space without definite communication with the subarachnoid compartment.

The adjacent vertebral bodies demonstrated preserved height and normal marrow signal intensity. No vertebral collapse, destructive osseous lesion, or significant intervertebral disc abnormality was identified. The posterior vertebral elements were preserved, and no definite extension through the neural foramina was observed.

Based on the characteristic multiloculated cystic appearance, the presence of daughter cyst-like structures, and the absence of significant internal enhancement, a spinal epidural hydatid cyst was considered the leading diagnostic hypothesis.

The differential diagnosis included an extradural arachnoid cyst, cystic schwannoma, and other rare cystic epidural lesions. However, the presence of multiple internal cystic compartments with thin intervening septations was considered particularly suggestive of hydatid disease.

A complementary contrast-enhanced computed tomography examination of the thorax, abdomen, and pelvis was proposed to investigate possible hydatid involvement of other organs, particularly the liver and lungs, which represent the most frequent sites of echinococcal infection.

Following multidisciplinary discussion involving radiologists, neurosurgeons, and infectious disease specialists, surgical decompression was recommended because of the progressive neurological symptoms and significant compression of the cauda equina.

The patient underwent posterior lumbar surgical exploration with decompression of the affected spinal levels. Intraoperatively, a multiloculated cystic lesion containing clear fluid and multiple daughter cyst-like structures was identified within the epidural compartment. Careful dissection was performed with the objective of removing the cystic structures while minimizing the risk of intraoperative rupture and dissemination.

Histopathological examination of the surgical specimen demonstrated features compatible with an echinococcal hydatid cyst, including a characteristic laminated acellular cyst wall, confirming the diagnosis of spinal epidural hydatidosis.

Postoperative management included antiparasitic treatment with albendazole under specialist supervision, together with clinical and radiological follow-up to monitor neurological recovery and detect possible recurrence.

The patient experienced progressive improvement in lumbar pain and lower-limb paresthesia following surgical decompression. Follow-up spinal MRI was planned to evaluate the postoperative epidural space and assess for residual or recurrent cystic disease.

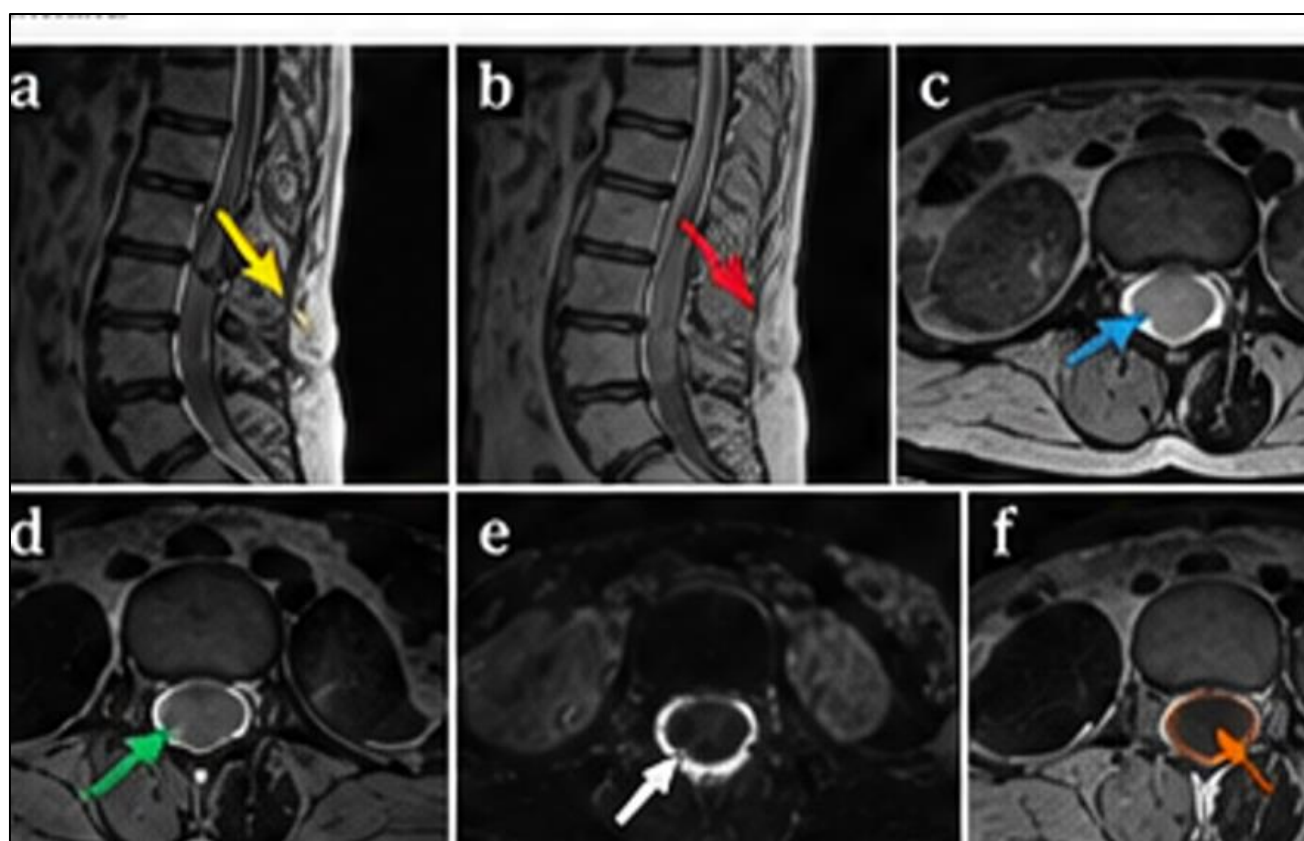


Figure 1: (a–b) Sagittal lumbar MRI illustrations demonstrating an epidural cystic lesion (yellow and red arrows); (c–f) axial MRI illustrations showing the lesion and its relationship to the spinal canal (colored arrows).

3 DISCUSSION

Spinal hydatid disease is uncommon and can mimic other extradural cystic conditions. MRI is essential for determining epidural extension, neural compression and lesion multiplicity. Differential diagnoses include arachnoid cyst, synovial cyst, cystic neoplasm and infection. A potential hydatid lesion requires careful multidisciplinary planning because invasive manipulation can cause complications.

For actual clinical reporting, the assessment should incorporate complete imaging sequences, patient history, prior examinations, multidisciplinary review and histopathology where indicated.

4 CONCLUSION

Primary spinal epidural hydatid cyst is an exceptionally rare condition that may cause significant neurological complications due to spinal canal compression. MRI plays a crucial role in diagnosis by demonstrating characteristic

multiloculated cystic lesions and assessing their relationship with neural structures. Early recognition, appropriate surgical management, and antiparasitic therapy are essential to prevent neurological deterioration and reduce the risk of recurrence.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Disclosure of conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Statement of informed consent

Written informed consent was obtained from a legally authorized representative(s) for anonymized patient information to be published in this article.

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- [1] Bibliographic references should be added and verified against the relevant literature before any academic use. No unverified citations are supplied.