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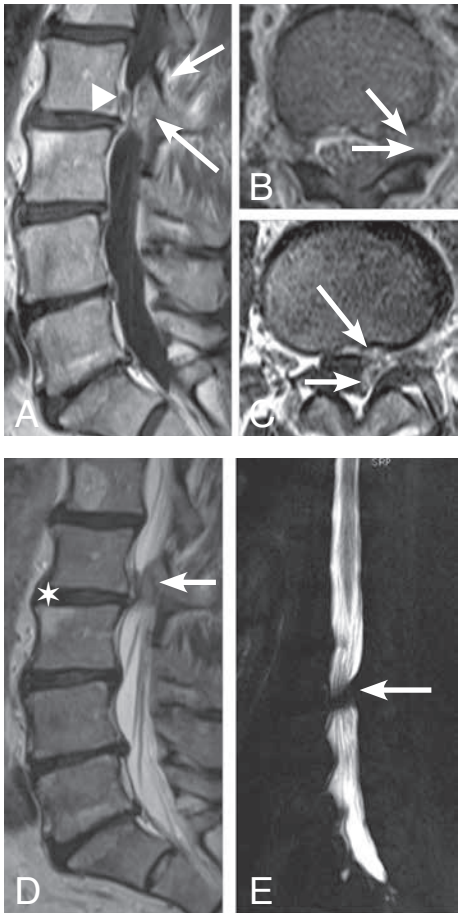
IMAGES IN CLINICAL RADIOLOGY



Extruded disc herniation in the posterior epidural space

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A 59-year-old patient was referred to the radiology department with a history of chronic left cruralgia which was already treated by radiofrequency under fluoroscopy on D12 and L1 roots. Blood tests were normal. The patient had no previous medical or surgical history. A lumbar spine MRI was performed (sagittal T1, T2 and axial T1, T2, with and without Gadolinium injection).

The MRI shows a left postero-lateral herniation with an upward migration from L2-L3 disc (Fig. A, white arrowhead). We can also see a frank thickening of the left L2 nerve root (Fig. B). In addition, the MRI also shows a mass located posterolaterally to the thecal sac (Fig. A white arrows, C, D, E), close to the ligamentum flavum already in the postero-lateral area of the spinal canal. This mass is hyperintense on T2 weighted images and isointense on T1 weighted images compared to the adjacent disc (Fig. A, D). On T1 weighted images after Gadolinium injection, the mass presents a heterogeneous peripheral ring enhancement which evokes a granulation tissue in first hypothesis. It was not an arthrosynovial cyst, there was no communication with the zygapophysial joints and the mass has no high hyperintense signal on T2 weighted images. There is no argument in favor of a ligamentum flavum lesion, indeed, in our case, the ligamentum flavum is well circumscribed with a hypointense signal on T1 and T2 weighted images. Dural lesions like neurinoma or schwannoma is less likely, this kind of lesions are hyperintense on T2 weighted images with a frank enhancement after Gadolinium injection. Spondylodiscitis could be excluded because L2-L3 disc is hypointense on T2 images, there is no irregularity or edema of the endplates and protein C reactive protein is normal.

Our first hypothesisis was an extruded disc fragment at the posterior epidural space. An orthopedic surgeon performed a laminectomy of L2 and L3 and confirmed the presence of a large extruded fragment from L2-L3 disc at the posterior epidurals pace, extending upwardly in the left L2 root and into the L2-L3 left foramen.

Comment

Migration of an extruded disc fragment to the posterior epidural space is limited by the presence of several anatomical obstacles at the anterior epidural space. According to Schellinger et al, the anterior epidural space is dorsally defined by the posterior longitudinal ligament and lateral membranes, ventrally by the periosteum of the vertebral body. Anterior epidural space is also divided into two lateral compartments by the medial septum. Laterally, nerve roots play also a role of barrier to the migration of an excluded fragment. According to Ebeling, migration of cranial fragment is more frequent with posterolateral herniation and caudal migration is more frequent with back middle herniation. The differential diagnosis includes arthrosynovial cyst, ligamentum flavum lesion, spondylodiscitis, hemangioma, neurinoma and dural lesions. MRI is considered as the best imaging technique to characterize extruded disc fragment in particular at the posterior epidural space. Excluded fragments are characterized by a hypointense signal on T1 weighted images, and 80% of cases show a hyperintense signal intensity on T2 weighted images compared to the degenerated disc of origin. Most cases reported a peripheral contrast enhancement around the fragment due to the presence of an inflammatory response with granulation tissue and neovascularization. Serious complications such as cauda equina or conus medullaris syndromes are exceptionally reported, nevertheless if this complication is suspected, urgent laminectomy and discectomy are necessary. The best therapeutic option for extruded disc fragment at the posterior epidural space is often considered to be surgery.

To conclude, the diagnosis of an extruded disc fragment at the posterior epidural space can be difficult because it is an infrequent localisation, with a multitude of differential diagnosis. MRI with contrast injection is an important tool for the detection of this type of pathology.

Reference

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