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Lumbar Synovial Cysts Eroding Bone

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Summary: Two cases of lumbar synovial cysts with erosion and lucency of the adjacent bone are presented; both mimicked a neoplasm.

Index terms: Spine, synovial cyst; Spine, computed tomography; Spine, magnetic resonance

Synovial or ganglion cysts are uncommon lesions that may occur within the spinal canal. Over 50 reported cases have demonstrated a preponderant incidence at the L4–L5 level in association with degenerative hypertrophic facet changes (1, 2). The typical computed tomography (CT) appearance is that of an epidural low-density lesion adjacent to the degenerated facet joint that may or may not have a dense periphery. Magnetic resonance (MR) imaging signal characteristics are variable (1). Bony involvement by these cysts has been described in the long bones (3, 4). This report presents two cases of lumbar synovial (ganglion) cysts in which there were lucent bony changes in the adjacent laminae mimicking an epidural tumor.

Case Reports

Case 1

A 63-year-old man complained of a 2-month history of "tightness" of both posterior legs and buttocks. This tightness improved with bedrest. However, the patient subsequently developed a tingling sensation in both feet. Physical examination was unremarkable.

CT myelography showed a smooth erosion of the left L4 lamina with erosion of the bony cortex adjacent to the ligamentum flavum, as well as a fracture through the dorsal cortex (Fig. 1A). Thickening of the contralateral ligamentum flavum related to the degenerative changes is also noted (Fig. 1A). Abnormal epidural soft tissue extending into the lamina defect was hypodense to intervertebral disk material and deformed the opacified thecal sac (Fig. 1B).

The above findings raised the question of a neoplastic process. At surgery, a grayish, well encapsulated lesion was encountered at the L4–L5 level. Pathologic examination demonstrated fibrotic and hyperplastic synovium with granulation tissue and hemosiderin laden macrophages, consistent with synovial cyst.

Case 2

A 60-year-old man presented with bilateral posterior thigh and buttock pain, which progressed to radiation to the heels. Physical examination revealed bilateral lower extremity weakness, most severe in the distal extremities.

MR examination of the lumbar spine showed a rounded area of abnormal signal intensity within the dorsal aspect of the spinal canal at the L4–L5 level with narrowing of the anteroposterior diameter of the spinal canal (Figs. 2A and 2B). The lesion had slightly greater signal intensity than that of cerebrospinal fluid on both T1- and T2-weighted images, and exhibited a peripheral rim of decreased signal intensity on the T2-weighted images. Subsequent CT myelography revealed a sharply defined erosion of the inner surface of the right L4 lamina and hypodense epidural soft tissue extending posteriorly into the lamina (Figs. 2C and 2D).

At surgery, abnormal epidural fibrous tissue was present and an adjacent cystic space was described within the lamina. The impression at surgery was that of a synovial component rather than tumor. Pathologic examination of soft, pink fragments of tissue revealed dense fibrous tissue with focal calcification. Though no synovial lining *per se* was present, synovial cysts may degenerate and lose their synovial lining (1). The lesion, therefore, was assumed to be a synovial cyst.

Discussion

Juxta-articular cysts related to hypertrophic facet joints have alternatively been referred to as "synovial cysts" or "ganglion cysts," depending on whether a true synovial lining is present or

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not. The etiology of these cysts is obscure, but may be related to either herniation of synovium from the facet joint, or mucinous degeneration of the connective tissue adjacent to the joint (5–7). Previous reports have described extradural lesions without associated lucent bony changes on CT and MR (1, 2, 8).

So called "intraosseous ganglia" have been described in the hip, ankle, knee, and carpal bones and have the same histology as the purely soft-tissue ganglia, and result in well-demarcated lytic areas in the subchondral portion of the bone (3). Two types of intraosseous ganglia have been described, one representing extension of a soft-tissue lesion into the bone and one where the lesion is primarily intraosseous without a known cause (4). Changes in a long bone secondary to a soft-tissue ganglion have been reported (3, 9). In 1968, Kao et al described a lumbar ganglion cyst with erosion of a pedicle (10).

Differential diagnosis of a dorsolateral extradural low-density lesion with thecal sac effacement includes synovial cyst, primary and secondary neoplasm, herniated nucleus pulposus, arachnoid cyst, and neurofibroma with cystic degeneration (5, 8). The lytic bony changes in both cases in this report and the pathologic fracture in case 1 raised the preoperative question of neoplasm. In the presence of a predominantly low-density dorsolateral extradural lesion in the lower lumbar region, a concomitant smooth erosion of the adjacent lamina should suggest the possibility of a synovial cyst in addition to the

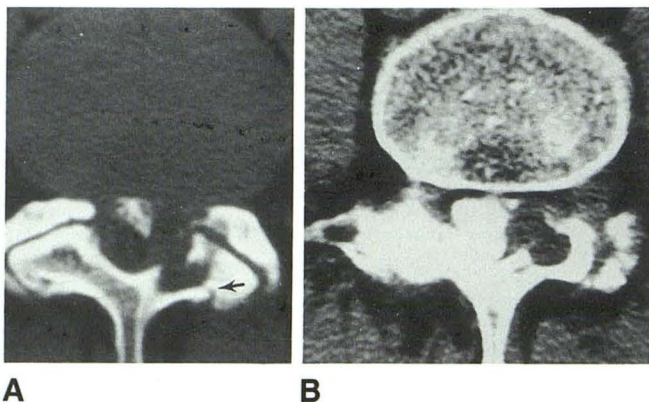


Fig. 1. A, Axial post myelogram CT section through the level of the L4 lamina demonstrates a smooth erosion of the lamina as well as a pathologic fracture (arrow) of the posterior cortex. Thickening of the ligamentum flavum related to the degenerative changes is also noted on the right side.

B, Axial post myelogram CT section at the L4–L5 level reveals low-density soft tissue extending from lamina into the left dorso-lateral aspect of the epidural compartment.

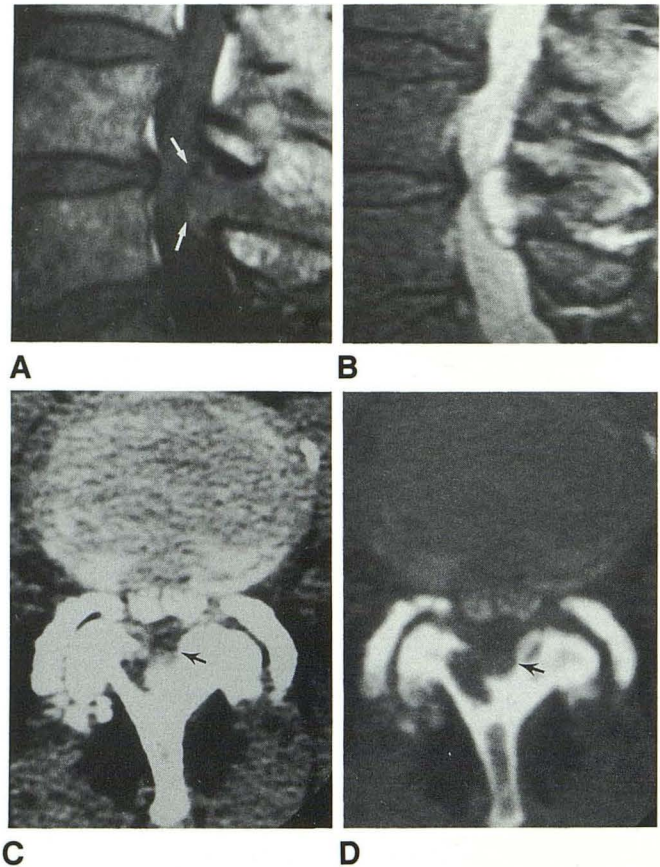


Fig. 2. A, Sagittal T1-weighted MR scan (800/20/4) shows focal extradural soft tissue (arrows) within the dorsal canal of slightly greater signal intensity than that of cerebrospinal fluid.

B, Sagittal T2-weighted MR scan (2000/70/2) reveals the lesion to be hyperintense, with a thin rim of diminished signal intensity peripherally.

C and D, Soft-tissue window (C) and bone window (D) views of a post myelogram axial CT section at the level of the L4 lamina demonstrate a low-density lesion within the bone and adjacent epidural soft tissues (arrow) causing flattening of the posterior aspect of the thecal sac.

other entities in the differential diagnosis described above.

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