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Postradiation Colospinal Fistula: A Rare Cause of Spinal Epidural Abscess

Wen Y. Wang, Jose E. Hernandez, Bruce Denny, Perry S. Gerard, and Joel Horovitz

Summary: We describe a rare case of spinal epidural abscess, which resulted from a colospinal fistula that developed as a complication of previous surgical resection and radiotherapy for rectal carcinoma. The patient's clinical course and the imaging features of colospinal fistula are described, along with a brief review of the literature.

Spinal epidural abscess (SEA) is uncommon, accounting for 0.2 to 1.2 cases per 10,000 hospital admissions per year (1, 2). The associated morbidity and mortality are high, and delay in diagnosis and treatment can lead to paralysis and/or death. Management requires a multidisciplinary approach (3). Although the clinical presentation of SEA is highly variable, nearly all patients report back pain and local tenderness (2). Stiffness and cramping are among the earliest symptoms, with radicular pain and paresthesias of the lower extremities developing later. Left untreated, weakness and paralysis may ensue (4). Fever may not be a presenting feature; chronic cases may exhibit little fever and a normal blood leukocyte count (2). Major clinical considerations in the work-up of backache in a febrile patient with local spinal tenderness include meningitis, spinal subdural abscess, acute transverse myelopathy, abnormalities of the vertebra or intervertebral disk spaces, vascular lesions, and tumors of the spinal cord (5).

Case Report

A 69-year-old man was admitted to the hospital with back pain, urinary retention, fecal incontinence, and weight loss. His medical history included resection of rectal cancer (Duke's B) with adjuvant radiation therapy about 5 months before this admission. Initial MR images of the lumbar spine revealed anterior epidural abscess at L5 and S1 (Fig 1A). The patient was started on intravenous antibiotics. On the fifth hospital day, he underwent surgical decompression of L5–S1 with laminectomy and discectomy. Postoperatively, he had a persistent low-grade fever. Physical examination revealed a sinus tract arising from the skin and soft tissues overlying L5–S1 in the back with feculent material draining from the cutaneous sinus. MR images of the lumbar spine showed a small gas collection in the region of the laminectomy defect and discectomy (Fig 1B–D). A CT scan of the pelvis showed an anterior paraspinal soft-tissue mass containing extraluminal gas adjacent to the

large bowel (Fig 1E). An emergency Gastrografin enema showed contrast extravasation from the distal colon (at the site of prior resection and anastomosis) extending into the L5–S1 disk and epidural spaces (Fig 1F). CT of the pelvis performed shortly after the Gastrografin study revealed presence of gas and contrast material in the L5–S1 epidural space, confirming the diagnosis of colospinal fistula (Fig 1G). The patient underwent a permanent (double-barrel) transverse colostomy procedure. Postoperatively, his cutaneous sinus tract healed completely; he regained his bowel and bladder functions, and, upon discharge, had no residual neurologic sequelae.

Discussion

A variety of imaging techniques are used in the diagnosis of SEA. CT findings of SEA include loss of epidural fat, narrowing of the disk space, erosive changes in the cortical endplates of adjacent vertebrae, and inflammatory changes with mass effect in the paravertebral soft tissues (1). Myelography typically shows an incomplete block at the level of the affected disk space (2). In cases of bacterial vertebral osteomyelitis, MR imaging of the spine with conventional spin-echo pulse sequences shows narrowing of the disk space, destruction of the cortical endplates, decreased T1 and increased T2 signal intensity in the adjacent vertebra paralleling the intervertebral disk and in the nucleus pulposus with enhancement after IV administration of contrast material, and associated adjacent inflammatory changes of the soft tissues anteriorly in the subligamentous space or posteriorly in the epidural space of the spinal canal (6).

The case of SEA reported here was caused by a colospinal fistula following pelvic irradiation. The diagnosis was suspected on the CT and MR studies, but a definitive diagnosis was not made until the Gastrografin enema was performed, which demonstrated the fistulous communication of the bowel with the disk and the epidural space. The use of direct instillation of a nonionic water-soluble contrast agent provided a simple, noninvasive method of direct visualization of the fistulous tract and permitted the definitive diagnosis to be made. Cases similar to ours include a patient with an epidural/subdural spinal empyema originating from a rectal fistula due to Crohn's dis-

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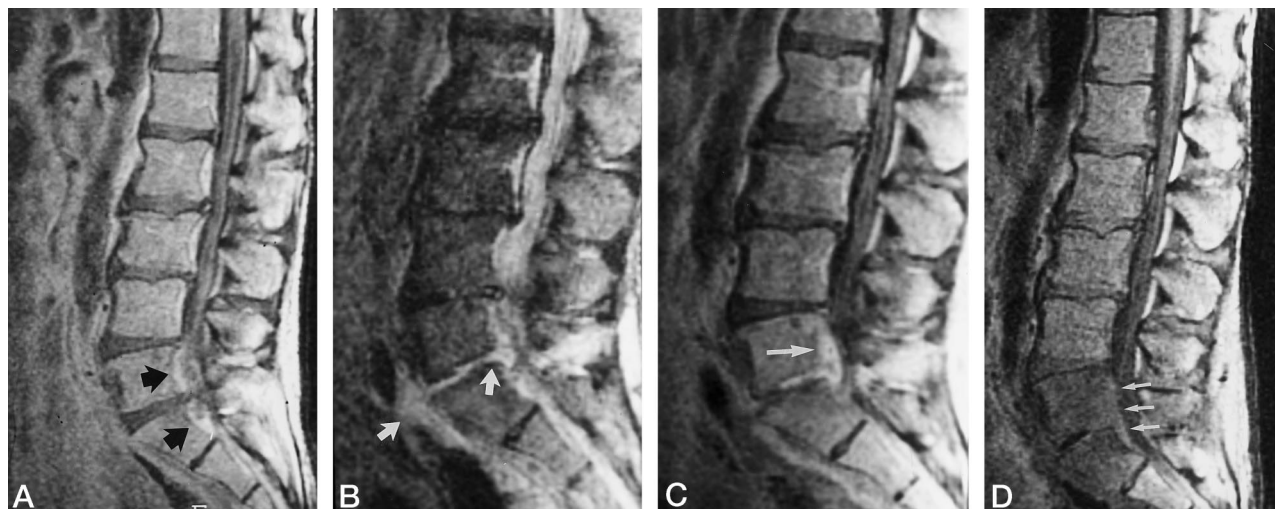


FIG 1. 69-year-old man with back pain, urinary retention, fecal incontinence, and weight loss following resection of rectal cancer with adjuvant radiation therapy about 5 months earlier.

A, Initial sagittal T1-weighted contrast-enhanced MR image reveals enhancement (arrows) of an anterior epidural abscess at L5 and S1.

B, Postlaminectomy sagittal T2-weighted MR image shows fluid in the prevertebral space, extending to the disk space and the L5-S1 anterior epidural space (arrows).

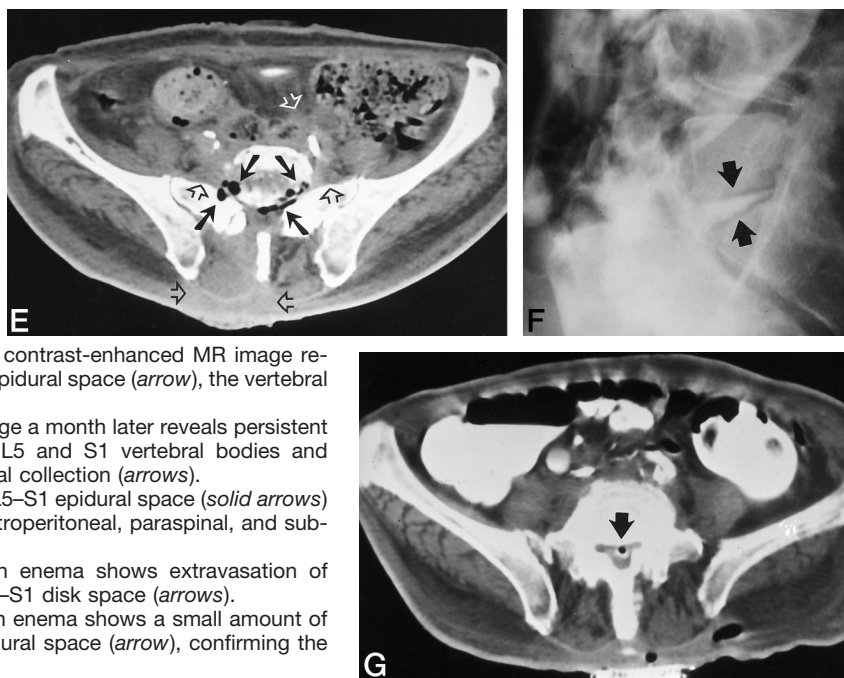
C, Postlaminectomy sagittal T1-weighted contrast-enhanced MR image reveals persistent enhancement in the L5-S1 epidural space (arrow), the vertebral bodies, and disk space.

D, Follow-up sagittal T1-weighted MR image a month later reveals persistent decreased signal intensity (edema) in the L5 and S1 vertebral bodies and decreased size of the L5-S1 anterior epidural collection (arrows).

E, CT scan of the pelvis shows gas in the L5-S1 epidural space (solid arrows) with associated infiltrative changes in the retroperitoneal, paraspinal, and subcutaneous tissues (open arrows).

F, Lateral radiograph during Gastrografin enema shows extravasation of contrast material from the bowel into the L5-S1 disk space (arrows).

G, CT scan of the pelvis after Gastrografin enema shows a small amount of gas and contrast material in the L5-S1 epidural space (arrow), confirming the diagnosis of colospinal fistula.



ease (3), a patient with epidural abscess from a duodenospinal fistula due to perforated duodenal ulcer (2), and a patient with an epidural abscess from a duodenolumbar fistula after surgical resection and irradiation for a retroperitoneal liposarcoma (1). Radiation therapy has been implicated as a cause of ischemic necrosis in the vessel walls and the gastrointestinal mucosa (7). Fistulas, if present, tend to develop within 3 months after completion of radiation therapy (7).

Conclusion

It is important that clinicians be alerted to the possibility of acute or chronic SEA due to colospinal fistula in a patient who has received irradiation for malignancy and who presents with acute or indolent back pain. Although the suspicion of metastatic osseous disease of vertebrae and cord compression is

high, in this situation, one should also include SEA due to fistulous communication of the bowel and spine in the differential diagnosis.

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