CASE REPORT

Chronic Postoperative Epidural Abscess with Ascending Neuromyotonia

James H. Diaz, MD, DrPH
Departments of Anesthesiology and Public Health and Preventive Medicine and the Multidisciplinary Pain Mastery Center, Louisiana State University Health Sciences Center, New Orleans, Louisiana

Spinal epidural abscess is an infrequent complication of epidural anesthesia (1), epidural steroid injection (2), spinal discography (3), systemic brucellosis (4), laminectomy, spinal trauma, and instrumentation (5). Spinal epidural abscess may follow hematogenous seeding by septic emboli in immunocompromised patients and IV drug users (5). A case of ascending neuromyotonia and epidural abscess months after superficial skin surgery in an immunocompetent patient is reported.

Case Report

A 74-yr-old active man was maintained by the author on nonsteroidal antiinflammatory drugs as needed and physical exercises for chronic back pain from L5-S1 spondylolisthesis, postoperative L3-4 laminectomy and discectomy, and thoracolumbar osteoarthritis. In September 1994, a dermatologist performed a punch biopsy of a suspicious skin lesion on the patient’s back that demonstrated basal cell carcinoma. On follow-up visits to the dermatologist after wide excisional biopsy of the skin cancer, the patient complained of severe pruritus in the surgical site, demonstrated self-inflicted excoriations over the mid back, and was managed symptomatically with topical corticosteroids. In March 1995, the dermatologist performed a skin biopsy in the pruritic area that demonstrated no evidence of cancer recurrence; the itching resolved.

While on European tour in May 1995, the patient experienced an acute onset of excruciating, thoracolumbar spine pain without distal radiation. The patient remained afebrile and booked an early return to the United States for pain evaluation and management by the author. Within days, the back pain had worsened and was associated with weakness and myotonic muscle spasms in the lower extremities and back, headache, stiff neck, and disorientation. On admission to a local hospital for evaluation, the patient spiked a low-grade fever, and a consulting neurologist suspected aseptic meningitis on the basis of physical findings. Ascending neuromyotonia resulted in acute apneic respiratory failure on the third day in the hospital. Mechanical ventilation was begun; blood and cerebrospinal fluid Gram stains and later cultures were consistent with *Staphylococcus aureus*.

A magnetic resonance imaging (MRI) study of the cervical spine demonstrated intramedullary swelling of the cervical cord at C1-3, consistent with transverse myelitis and meningitis. Although appropriate IV antibiotics were administered, the patient’s cardiovascular condition deteriorated and required vasopressor support. The patient died on the seventh day of hospitalization. The neuropathologic findings on postmortem examination included 1) a chronically organized spinal epidural abscess extending anteriorly and paravertebrally from the C1-2 interspace to the T5-6 interspace and contiguous with a subpleural, paravertebral abscess along the inside of the left sixth rib; 2) no evidence of cerebral or cerebellar herniation; 3) no evidence of myelitis, meningitis, or meningoencephalitis; and 4) cultures of the dura, abscess fluid, and cerebrospinal fluid positive for methicillin-sensitive *S. aureus*.

Discussion

In 1998, Wong and Raymond (6) reviewed their experiences managing seven cases of spinal epidural abscess. Four cases followed direct, local extension from either vertebral osteomyelitis (three cases) or epidural anesthesia (one case); two cases arose hematogenously; and one case occurred from indeterminate causes (6). The mean patient age was 52 years, and *S. aureus* was the etiologic agent in all of the microbiologically confirmed cases (6). There was a mean abscess cavity extension of 4.3 vertebral bodies; fever and leukocytosis were not uniformly present; and the erythrocyte sedimentation rate was more than 30 mm/h in all patients. Three of four patients with paralysis died (6). Although the exact incubation period in the case reported could not be precisely determined (three to nine months), Bromage (7) has reported incubation periods of 4 to 40 days for...
postepidural anesthesia spinal abscesses. Although the patient was not predisposed to epidural abscess by epidural instrumentation or immunosuppression (8), he had undergone multiple paravertebral skin surgeries in the previous nine months (9,10). Spinal epidural abscess has also occurred by direct, local extension from other adjacent, extraspinal infections, such as retropharyngeal abscess (11), paranasal sinusitis (12), and infected iliac hematoma (13).

Many authors have reported inconsistencies in the presenting findings of patients with chronic epidural abscess, including the absence of fever, leukocytosis, radicular radiation, and neurologic deficits (5–7,11,14,15). Maddison et al. (16) have also reported acquired neuromyotonia in a patient with S. aureus septicemia and spinal epidural abscess. They (16) identified autoantibodies to neuromuscular voltage-gated potassium channels by using radioimmunoassay during the acute presentation of neuromyotonia from ascending epidural abscess and documented antibody resolution on clinical recovery.

The only consistent, clinical findings in spinal epidural abscess are 1) severe spine pain, often overlooked in the elderly with preexisting back pain; and 2) an increased erythrocyte sedimentation rate (more than 30 mm/h), often overlooked as a nonspecific indicator of systemic inflammation (6). The only consistent radiographic findings in spinal epidural abscess are abnormalities noted on MRI T2-weighted images of adjacent disk spaces (17), which may also occupy multiple, noncontiguous disk spaces (18). Thus, plain spinal radiographs are nonspecific and often normal in spinal epidural abscess; gallium bone scintigraphy is sensitive for inflammation but nonspecific as to the precise location of the abscess; and computerized axial tomography fails to delineate soft tissue extensions and abscess contiguities (19). Therefore, total spinal MRI remains the preferred imaging study for the diagnosis of spinal epidural abscess (19). Prompt surgical drainage by level-relevant laminectomy (20,21) and appropriate IV antibiotic therapy remain the recommended treatments for patients with epidural abscess and paralysis (20).

This case of insidious epidural abscess unassociated with epidural instrumentation presented a confusing clinical picture with three diagnostic failures. First, the surgical etiology for spinal epidural abscess was overlooked because of the length of postoperative time expired. Second, the clinical diagnosis of epidural abscess was obscured by the paucity of presenting features, especially high, spiking fever and leukocytosis. Last, the radiographic diagnosis of a multiple spinal segment epidural abscess with extension from a preexisting paravertebral abscess was missed by segmental cervical, rather than total, spinal MRI. Clinicians must remain vigilant for the chronic, insidious presentation of spinal epidural abscess with ascending neuromyotonia, not only in immunocompromised patients predisposed by epidural anesthesia, but also in immunocompetent patients predisposed by common outpatient operative procedures in superficial surgical sites often contaminated by S. aureus (9,10).

References