Spinal Epidural Abscess

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KEYWORDS

• Spinal abscess • Spinal epidural abscess • Back pain • Spinal cord compression • Spinal infection

KEY POINTS

- Spinal abscess is an area of infection within the epidural space of the spinal canal.
- Early diagnosis of back pain is important before symptoms of spinal cord compression develop.
- Treatment includes antibiotics and possibly surgical drainage of the abscess.
- Most patients recover with no neurologic deficits.

INTRODUCTION

Infections of the spine are rare and present with a variety of nonspecific signs and symptoms, making them a diagnostic challenge. Infections of the spine include osteomyelitis and epidural, subdural, and intradural abscesses.[1] Specifically, a spinal epidural abscess (SEA) is a localized bacterial infection above the dural layer of the spinal meninges.

SEA is most often located in the thoracic[2] and lumbar spinal regions.[3] Onset of symptoms may be sudden or slowly progressive and can be the result of systemic bacteremia or septicemia. The most common causative organism is *Staphylococcus aureus*. Favorable outcome requires prompt diagnosis,[4] early medical, and often surgical interventions to prevent the development of neurologic deficits[5,6] or even death.[3,7,8] Nurses play an important role in caring for patients with SEA, from the early phases of diagnosis and treatment to the later phases of recovery and rehabilitation.[4,9]

EPIDEMIOLOGY

Spinal epidural abscesses are relatively uncommon, 2 to 3 per 10,000 hospital admissions.[5,10] Although rare, a rising incidence over the last 2 decades may be attributed to an aging population, a rise in the number of invasive spinal procedures, and an increase in intravenous drug use.[5] Other potential explanations for the increase are related to predisposing conditions, such as diabetes mellitus, alcoholism, or HIV infections.[5]

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SEA occurs in all age groups, with a greater incidence in those between the ages of 50 and 70, and slightly more men than women.[6,10] IV drug users who develop an SEA are commonly younger than 50.[11] Men are also more likely to have primary rather than secondary SEA.[12] The thoracic level is the most common site for an SEA in 50% to 80% of the cases, less commonly the lumbar region (17%–38%), followed by the lumbar and cervical sites (10%–25%).[11] SEA is rarely diagnosed in children.[12]

PREDISPOSING CONDITIONS

SEA is associated with systemic states of altered immune function, such as diabetes mellitus, end-stage renal disease, septicemia, immunocompromised states, malignancy, morbid obesity, or alcoholism. Discitis or vertebral osteomyelitis is associated findings in 80% to 100% of patients.[11] Local factors that contribute to the development of SEA include spinal trauma, spinal surgery, and intrathecal injection or catheter placement into the vertebral canal.[13] A history of spinal trauma accounts for 10% to 30% of cases.[11]

Patients that develop SEA usually have one or more comorbidities. The most common comorbidity is an underlying infectious process. Primary SEA is diagnosed when bacteria gain access to the epidural space through contiguous spread (primary) or hematogenous dissemination[5,12] from elsewhere in the body, such as skin lesions or oral foci. The abscess can be located in either the anterior or the posterior epidural space.[2] Secondary SEA, a type of surgical site infection, occurs after direct introduction of pathogens into the epidural space.[12,13] This infection may occur after spinal trauma, injections, surgery, or during lumbar punctures or epidural analgesia. In a 4-year prospective study of 36 patients, primary SEA was found in 44% of patients and was secondary to elective spinal procedures in 56%.[12]

DIAGNOSIS

Diagnosis of SEA is based on clinical presentation and supported by laboratory and imaging data. Diagnosis may be delayed when there is no characteristic clinical presentation, and radiographs are frequently noninformative.[14] The first published case of SEA was reported in the literature in 1761, describing a 40-year-old man who presented with severe pain and paralysis of the lower extremities.[6]

Clinical Presentation

The diagnosis of SEA may be difficult and delayed because early signs and symptoms may be difficult to distinguish from other causes of back or neck pain. A 4-stage progression of SEA signs and symptoms was introduced in 1948.[3] The first phase presents as nonspecific clinical symptoms, such as back pain, fever, and malaise. The second phase is characterized by radiculopathy and paresthesias. Symptoms commonly seen in the third phase include motor and sensory deficits and bowel or bladder dysfunction. Last, 34% of patients will present in the final stage, paralysis.[3,6] Average time from back pain to nerve root symptoms is 3 days; 4.5 days from nerve root symptoms to weakness, and 24 hours from weakness to paraplegia.[15]

For most patients, the classic symptom triad of fever, back pain, and neurologic deficits may be absent, and, if present, may indicate a progression to irreversible symptoms.[7] A meta-analysis of 915 patients revealed that fever was present in 66%, back pain in 71%, and muscle weakness in 26% of SEA patients.[6] Fever is frequently absent in patients with a history of intravenous drug usage.[1]

Davis and colleagues[7] analyzed 1019 patients seen in their emergency department with back or neck pain. Their primary goal was to determine the incidence of