



Case Report

A Case of Unremitting Back Pain Leading to the Diagnosis of a Large Spinal Epidural Abscess

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Abstract

Spinal epidural abscess (SEA) is a rare disease with a significant rate of morbidity and mortality. The triad comprised of back pain, fever, and neurological deterioration is observed only in 8 to 15% of cases. We present a 48-year-old Caucasian female with a history of migraines, anemia, and morbid obesity. She presented to walk in clinic (WIC) with severe, unremitting back pain for 10 days. She was seen multiple times prior at the emergency department (ED) and outpatient clinics. She presented with severe back pain with numbness in her arms despite prior conservative treatments. On exam, she was significantly tender along her thoracic spine with numbness in bilateral upper extremities. Patient was admitted to the hospital for an urgent MRI of the spine which revealed a large epidural abscess extending from C2 through T12 with long segment effacement of the thecal sac and cord compression with cord edema at the upper thoracic levels noted. Neurosurgery was consulted emergently and performed C2-T10 decompressive laminectomy and fusion. Broad spectrum intravenous antibiotics were started and deescalated after cultures grew methicillin-sensitive *Staphylococcus aureus*. Pain and upper extremity numbness slowly improved after surgery. Upon further review of her history, she had Botox injections for migraines in her cervical paraspinal muscles two weeks prior to presentation which could have been a possible risk factor leading to her developing a SEA.

Keywords: Spinal epidural abscess; Botox; Neurologic emergency

Introduction

Spinal epidural abscess (SEA) is a rare disease with a significant rate of morbidity and mortality. The triad comprised of back pain, fever, and neurological deterioration is observed only in 8 to 15% of cases [1]. SEA is commonly misdiagnosed particularly in patients with an insidious presentation. The diagnosis of a SEA may be delayed in up to 75% of cases [2]. The incidence of a SEA is approximately 2 to 8 cases per 10,000 hospital admissions [1]. The most common presenting symptoms are back pain (67%) and motor weakness (52%) [2]. Prompt recognition combined with timely treatment is key to preventing a catastrophic outcome. We present a case of a patient with persistent back pain that failed conservative treatment despite multiple ER and outpatient office visits. She was ultimately diagnosed with a SEA and required emergent surgery.

Case Presentation

A 48-year-old Caucasian female with a history of migraines, anemia,

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and morbid obesity presented to the outpatient walk in clinic (WIC) with severe unremitting back pain for 10 days. She was seen multiple times prior at the emergency department (ED) and outpatient clinics. She initially presented to the ED with sudden onset of severe back pain after standing from a chair. She was hypertensive and tachycardic. Labs revealed leukocytosis. CT scan of the abdomen showed no acute process, and CT angiogram of chest was negative for pulmonary embolism. She was given nifedipine and morphine and discharged home with methylprednisolone and oxycodone. Patient returned to the ED four days later with worsening back pain. Labs revealed leukocytosis, transaminitis, anemia, hypokalemia and hyponatremia. Urinalysis was consistent with a urinary tract infection. Lumbar spine plain film showed mild diffuse degenerative disc disease with bilateral L5 pars defect. Patient received potassium, cyclobenzaprine, and ceftriaxone. She was observed overnight and discharged with nitrofurantoin. She was seen three days later as an outpatient with continued back pain progressing up her neck associated with hand numbness. Repeat laboratory workup was ordered and revealed similar findings as seen on her previous results. She was ordered to have a routine MRI spine. She was given additional pain medication and muscle relaxers.

The following day, she presented to the walk-in clinic with severe back pain despite prior treatments. She now described shooting pain from her back to her neck with numbness in her arms. On exam, she was significantly tender along her thoracic spine with numbness in her bilateral upper extremities. Patient was admitted to the hospital for urgent MRI of the spine which revealed a large epidural abscess extending from C2 through T12 as well as long segment effacement of the thecal sac and cord compression with cord edema at the upper thoracic levels (Figure 1).

Neurosurgery was consulted emergently and performed a C2-T10 decompressive laminectomy and fusion. Broad spectrum intravenous antibiotics were started and deescalated after cultures grew methicillin-sensitive *Staphylococcus aureus*. Post-surgical course was overall benign with the exception of an acute kidney injury due to severe hypovolemia

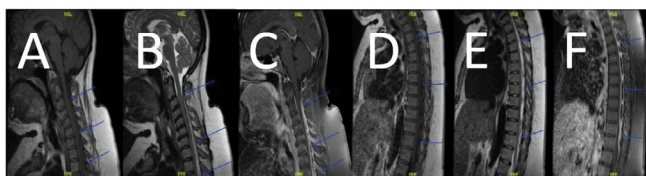


Figure 1: Cervical and thoracic sagittal T1-weighted (A and D), T2-weighted (B and E), and postcontrast T1-weighted (C and F) images showed a fluid collection consistent with epidural abscesses starting from C2 to T12 vertebrae, hypointense on T1-weighted images, hyperintense on T2-weighted images and showing peripheral enhancement after intravenous contrast administration (arrows).

intraoperatively. Pain and upper extremity numbness slowly improved. Upon further review of her history, she had Botox injections for migraines in her cervical paraspinal muscles two weeks prior to her initial presentation. This could have been a possible risk factor leading to the patient developing a SEA.

Discussion

The Italian anatomist Giovanni Morgagni first described the process of a SEA in 1761[3]. By the advent of the 20th century, the mortality rate for patients with a SEA was still close to 100% [4]. This case serves as a reminder that a SEA is an infectious disease emergency and should be considered when a patient presents with uncontrolled back pain and/or neurologic deficits, especially when conservative treatment fails. Despite the severity of this infectious disease process, 50% of SEA cases are surprisingly afebrile [5]. Up to 90% of patients with a SEA are misdiagnosed their first ED visit [5]. A recent study from a large academic center showed that the rate of the diagnosis of a SEA had increased greater than 5 fold compared to previous years which highlights the need for clinicians to be on heightened alert when a patient is presenting with symptoms that could be reflecting the presence of a SEA [6]. Because a spontaneous SEA can occur, the absence of risk factors should not exclude the possibility of a SEA [5]. The thoracic and lumbar spine account for most infections, and only 20% of infections occur in the cervical spine [4]. Our patient had both cervical and thoracic spine involvement. When considering risk factors, the most common risk factors include a history of diabetes, intravenous drug use, chronic renal failure, immunosuppressant therapy, or a recent invasive spine procedure [7]. Our patient's risk factor was Botox injections in her paraspinal muscles which very well may have caused an introduction to the pathological microbe. 20% of SEAs develop as a result from skin and soft tissue infections [8]. If a SEA needs to be ruled out, gadolinium-enhanced MRI is the most sensitive, specific, and beneficial imaging modality for establishing a diagnosis [9].

Attempts to try medical management without surgical intervention in the treatment of a SEA have not had favorable outcome rates. In a 2014 study, 41% of patients with a SEA treated medically failed management and eventually required surgical decompression [10]. Once a SEA is identified, surgical treatment combined with antibiotics should be done to prevent long term morbidities and mortality. As seen in our patient, *Staphylococcus aureus* (63.6%) is the most common causative organism in patients with a SEA [1]. 60% of patients diagnosed with a SEA are managed surgically [1]. Unfortunately, 4-22% of patients with a SEA develop irreversible paralysis [1]. Due to immobility and the long rehabilitation process required for many patients, morbidities can include the development of a deep vein thrombosis and

pressure ulcers [1]. The mortality in patients with a SEA has improved in recent years compared to the early twentieth century with a rate of 1.3 to 31% [1]. Outcomes are mostly determined by the severity and duration of neurological deficits prior to treatment and intervention which illustrates the need for early recognition and diagnosis [11].

Conclusion

In patients with persistent and worsening back pain, taking a thorough history and performing a complete physical examination is imperative. Identifying risk factors and exam findings that could lead to a SEA being in the differential diagnosis is needed to prevent a delay in diagnosis. Recognition of the possibility of a SEA warrants a prompt diagnostic workup with imaging being the most essential to reach a definitive diagnosis so that intervention and treatment can be initiated to prevent catastrophic short and long term health outcomes.

Conflicts of Interest:

Authors have no conflicts of interest to disclose.

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