

Management of spontaneous spinal epidural abscess: A case report

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Abstract

Background: Spinal epidural abscess (SEA) is a rare but severe pyogenic infection of the epidural space.

Case presentation: A 60-year-old female with a history High Blood Pressure, Chronic Renal Failure and the non-surgical descending aortic aneurysm was hospitalized 10 days before its symptoms in the intensive care unit for treatment of acute infective endocarditis caused by *Staphylococcus aureus*. She presented 24 hours before a lower limb motor weakness, bladder and bowel dysfunction (urinary and anal incontinence). MRI spine with gadolinium demonstrating an epidural contrast-enhancing mass extending from mid Th10 to Th12 left-side with infiltration of the pedicles and extension to the soft tissues and is most consistent with epidural abscess. Within the next few hours the patient underwent decompressive laminectomy (level Th10-Th12) and surgical evacuation of the abscess. The post-operative cultures from the abscess were positive for *Staphylococcus aureus*. Intravenous antibiotics were continued, and active neurorehabilitation was initiated. Immediate improvement of the paralysis and sphincter function was observed as a result of the surgical decompression.

Conclusion: The incidence of spinal epidural abscess is increasing with the aging of the population and the frequency of immunocompromising diseases. The most common causative agent is *Staphylococcus aureus*. The signs and symptoms of epidural abscess are non-specific. Empiric antibiotic therapy and emergency surgical decompression improve the prognosis.

Keywords: Spinal epidural abscess; Laminectomy; Spinal cord compression; A case report

1. Introduction

Spinal epidural abscess (SEA) is a severe pyogenic infection of the epidural space that leads to devastating neurological deficits and may be fatal [1]. Risk factors for epidural abscess include immunocompromised states such as diabetes mellitus, alcoholism, cancer, chronic renal failure, spinal abnormality or intervention (degenerative joint disease, trauma, surgery, drug injection...), or a potential local or systemic source of infection (skin and soft-tissue infections, osteomyelitis, urinary tract infection, sepsis. [1]. the signs and symptoms of epidural abscess are nonspecific and can range from low back pain to sepsis. The treatment of choice in most patients is surgical decompression followed by four to six weeks of antibiotic therapy. The most common causative organism is *Staphylococcus aureus*. [1, 2].

We present a case of a 60 years old women who suddenly presented acute spinal cord compression

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2. Case report

2.1. History and clinical presentation

A 60-year-old female with a history of High Blood Pressure , Chronic Renal Failure , non-surgical descending aortic aneurysm hospitalized 10 days before its symptoms in the intensive care unit for treatment of acute infective endocarditis caused by staph coccus aureus.

The history of the disease is marked by the presence 24 hours before a lower limb motor weakness and sensory deficit with bladder and bowel dysfunction (urinary and anal incontinence).

On physical examination, she had mild tenderness on palpation of the lower thoracic spine with no external evidence of injury. She had weakness in the lower limbs with muscle strength of 0/5 and flaccid hypotonia, Achilles tendon hyperreflexia. No muscle atrophy was observed. Decrease in the tone of the rectal sphincter was objectified by digital rectal examination.

2.2. Diagnosis assessment

Magnetic resonance imaging (MRI) of the spine with and without contrast revealed a paraspinal soft tissue fluid collection low signal intensity on T1-weighted images enhanced after administration of Gadolinium (Gd)-contrast , high intensity on T2-weighted at Th10-Th12 with epidural extension, infiltration of the pedicles and extension to the soft tissues.

Laboratory Complete blood count (CBC) examination revealed elevated white blood cells (23.000 /mm³) and C-reactive protein level (327 mg/l). *Staphylococcus aureus* was detected from blood culture.

Based on these findings a spinal epidural abscess diagnosis was considered.

2.3. Management and histopathological examination

The surgical indication was retained and the patient was admitted to the operating room after a Th10 –Th11 decompressive laminectomy. The abscess was evacuated and the epidural abscess was washed with the saline solution. A sample of pus was sent to the bacteriological department for analysis.

2.4. Outcomes and Follow-up

Postoperatively, she did not present an aggravation of her neurological deficit.

The post-operative culture from the abscess was identified *Methicillin Sensitive Staphylococcus Aureus (MSSA)*. Intravenous antibiotics was initiated and the patient was received the ant staphylococcal antibiotics (Vancomycin 2g per day with ceftriaxone (3rd generation cephalosporin, 2g once a day) for 30 days and relayed an oral antibiotics. Along with medical treatment, an active neurorehabilitation was initiated.

At 1 month of follow-up period, the patient partially recovered the signs and symptoms.

3. Discussion

Spinal epidural abscess (SEA) is a rare disease characterized by the accumulation of pus in the epidural space causing compression of the spinal cord and spinal roots. [2]. SEA has an estimated incidence rate of 0.2 to 2.8 cases per 10,000 per year, with the peak incidence occurring in people who are in their 60s and 70s. [3,4]. Risk factors include ,old age, diabetes mellitus, chronic renal failure , alcoholism, or other immunocompromised states, cancer, intravenous drug use, trauma and spinal surgery. [3,4,5,6]. The patient presented had the predisposing factor of older age and risk factors of chronic renal failure.

Infection can be due to direct transmission from a nearby infection, hematogenous infection from a local or lymphatic infection, iatrogenic inoculation, but some cases show no obvious source of infection, and several are associated with immunodeficiency. Because the extradural space has abundant blood flow, hematogenous infection from Urine Tract Infection or infective endocarditis is common. [2,6]. Our patient presented an infective endocarditis. It is therefore a hematogenous transmission. Classical symptoms of SEA include back pain, fever and neurological deficits. However, according to two recent studies, this triad is only present in 10–15% of the cases at first physician contact [6].

Neurological manifestations, such as motor weakness, radiculopathy, and bladder and bowel dysfunction, have been reported in up to half of the cases [6].

In our case, the patient presented these atypical manifestations. She did not complain of fever or back pain, but presented with sudden paralysis of the lower limbs with rapidly progressive bladder and intestinal dysfunction.

MRI with gadolinium (Gd-MRI) has a specificity and sensitivity above 90% to detect SEA, and being superior to other imaging modalities, is therefore the diagnostic method of choice [6]. The epidural abscess presents as a collection in iso or hypo-signal in T1-weighted Imaging (WI) and in T2 hypersignal T2WI [2,7]. The imaging of our patient had the same radiological characteristics as described by these authors. [Figure 1]

Based on the clinical features and imaging studies, the patient underwent an emergency surgical decompressive laminectomy at the level at the lesion (Th10-Th12) and surgical pus drainage.

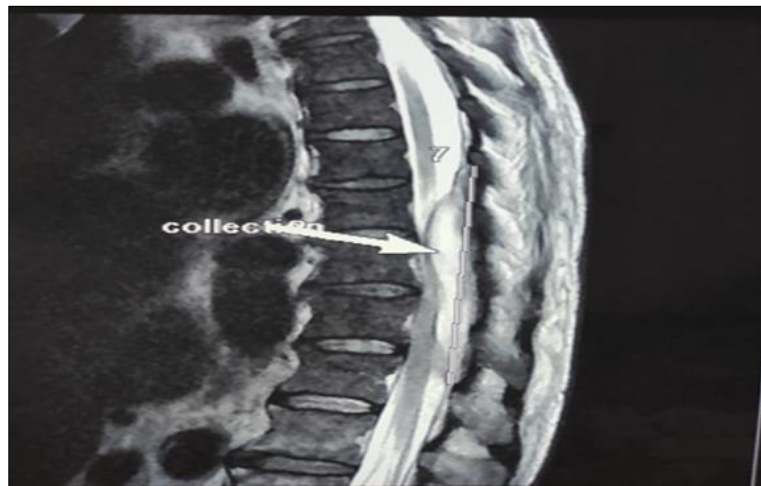


Figure 1 Thoracic Spine MRI Sagittal T2: The lesion is hyperintense in T2-weighted imaging, at the thoracic T10-T12 level

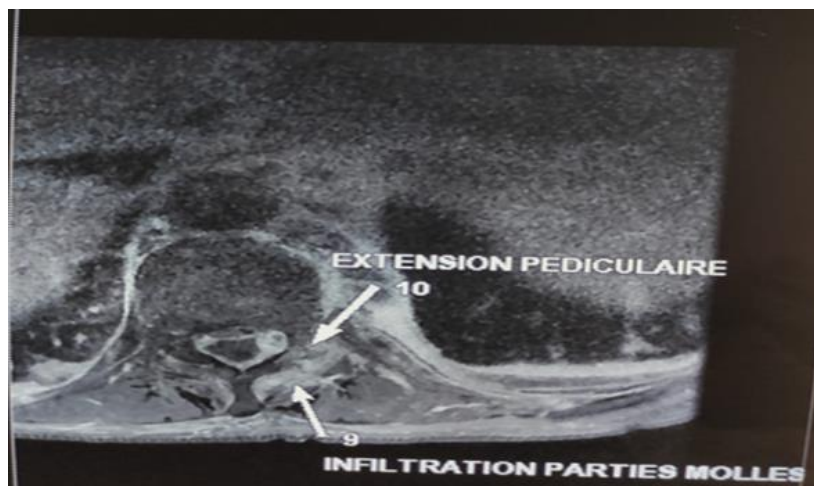


Figure 2 T2-weighted & axial imaging: The lesion infiltrates the pedicles and extends towards the soft tissues

Authors reported the surgical therapy is the treatment of choice in the overwhelming majority of cases. Rapid surgical intervention is not only needed to minimize neurological damage, but also for controlling sepsis. The evaluation of the indication for decompressive surgical intervention should always urgently be considered, since neurological improvement is unlikely if the duration of paresis exceeds 24–36 h [6].

Vakili et al. [8] analyzed 101 retrospective case series and concluded that the most common microbial diagnosis was *Staphylococcus Aureus*. In our case, the blood culture and the culture of the pus sampling was identified *Staphylococcus Aureus*. She received empirical antibiotic therapy with intravenous ceftriaxone (3rd generation cephalosporin, 2g once a day) and vancomycin (2 g per day) and was continued after 04 weeks. This same medical therapeutic project is described in most authors [7, 9].

Sendi et al. [6]. Reported the final neurological outcome correlates strongly with the severity and duration of neurological deficits prior to surgery. Accordingly, post-operative improvement of neurological deficits has been correlated with the rapidity of surgical intervention (within 24 h). However, in our case immediate improvement of the paresis and sphincter function was observed as a result of the surgical decompression.

4. Conclusion

In summary, the incidence of spinal epidural abscess is increasing with the aging of the population and the frequency of immunocompromising diseases. The most common causative agent is *S. aureus*. Classical symptoms of SEA include back pain, fever and neurological deficits. The diagnostic study of choice is MRI with gadolinium contrast. Once a diagnosis is made, empiric antibiotic therapy must be instituted and immediately surgical decompression must be performed because the early intervention improves the prognosis.

Compliance with ethical standards

Disclosure of conflict of interest

The authors do have not any conflicts of interest in this case report and any financial resources.

Statement of informed consent

Informed consent and verbal permission were obtained from the patient before the submission of this article. In addition, this article follows both the Consensus-based Clinical Case Reporting Guideline and the Recommendations for the Conducting, Reporting, Editing, and Publication of Scholarly Work in Medical Journals.

References

- [1] Rosc-Bereza K, Arkuszewski M, Ciach-Wysocka E, et al. Spinal Epidural Abscess: Common Symptoms of an Emergency Condition: A Case Report. *The neuroradiology journal*. 2013; 26(4): 464-468.
- [2] Tetsuka S, Suzuki T, Ogawa T, et al. Spinal epidural abscess: a review highlighting early diagnosis and management. *JMA journal*. 2020; 3(1): 29-40.
- [3] Chao D, Nanda A, Spinal epidural abscess: a diagnostic challenge. *American family physician*. 2002; 65(7): 1341.
- [4] Chima-Melton C, Pearl M, and Scheiner M. Diagnosis of spinal epidural abscess: a case report and literature review. *Spinal Cord Series and Cases*. 2017; 3(1): 1-4.
- [5] Darouiche RO. Spinal epidural abscess. *New England Journal of Medicine*. 2006; 355(19): 2012-2020.
- [6] Sendi P, Bregenzer T, et Zimmerli W. Spinal epidural abscess in clinical practice. *QJM: An International Journal of Medicine*. 2008; 101(1): 1-12.
- [7] Yang X, Guo R, Lv X et al. Challenges in diagnosis of spinal epidural abscess: A case report. *Medicine*. 2019; 98(5).
- [8] Vakili M, Crum-Cianflone NF. Spinal epidural abscess: a series of 101 cases. *The American journal of medicine*. 2017; 130(12): 1458-1463.
- [9] Dai G, Li S, Yin C, et al. Studies on 11 cases of spinal epidural abscess and literature review. *Infection and Drug Resistance*. 2020; 13): 3325.