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CASE REPORT

SPINAL EPIDURAL ABSCESS DUE TO STAPHYLOCOCCUS AUREUS IN HEALTHY PATIENT: A RARE CASE REPORT

Faiz Ur RehmanFarooqui[1]., Mayank G. Vats[4]., Sadia Tariq[3]., Asadullah Nawazani[2]., Hina Zia Mirza[5]., Noor Abdul Haq[6] and Deepa Vats[7]

[1, 3,4,5,6] Department of Internal Medicine, Dubai Hospital, Dubai, UAE
[2]Respiratory & Sleep Medicine, Rashid Hospital, Dubai, UAE
[4]Interventional Pulmonologist, Department of Pulmonology and Sleep Medicine, Rashid Hospital, Dubai
[7]Department of ENT, Dubai Hospital and Al Jalila Hospital, Dubai

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A B S T R A C T

Despite modern medical advances, the morbidity and mortality rates associated with spinal epidural abscess remain significant, and the diagnosis often is elusive. The highly variable presentation of spinal epidural abscess may confuse the diagnosis and delay indicated surgical intervention. Localized back pain in a febrile patient at significant risk for epidural abscess warrants erythrocyte sedimentation rate measurement. The presence of erythrocyte sedimentation rate elevation or evidence of spinal cord compression on physical examination are indications for immediate magnetic resonance imaging examination with contrast enhancement. Surgical drainage with sustained intravenous antibiotic treatment remains the cornerstone of therapy. Non operative management may be considered in selected cases.

We report a case of Lumbar spinal epidural abscess without any evidence of predisposing factors. Methicillin-susceptible Staphylococcus aureus was identified as the causal pathogen. Infection was managed with Neurosurgical intervention (laminectomy) followed by debridement and a prolonged course of recommended antibiotic therapy.

INTRODUCTION

Epidural abscess is a rare but important suppurative infection of the central nervous system, that are enclosed within the bony confines of the skull or spinal column .It has a tendency to expand and hence threatens the spinal cord or cauda equina by compression and also by vascular compromise, producing sensory symptoms and signs, motor dysfunction, ultimately leading to paralysis and death. Intervention early in the course of the disease undoubtedly improves the outcome.

The incidence of spinal epidural abscess, two decades ago diagnosed in approximately 1 of 20,000 hospital admissions, has doubled in the past two decades, owing to an aging population, increasing use of spinal instrumentation and vascular access, and the spread of injection-drug use. The abscess commonly occurs after lumbar puncture, epidural anesthesia[1] or spinal surgery. The most common predisposing factors are greater numbers of spinal procedures, increased use of immunosuppressive agents and antibiotics, diabetes mellitus, trauma, intravenous drug abuse, alcoholism and septicemia. However no identifiable predisposing factor can be found in some patients. Irreversible paralysis affects up to 22% of patients, not because of bacterial virulence but due to delayed diagnosis. Diagnostic delays were present in 75% of SEA patients. Residual motor weakness was present in 45% of these patients vs. only 13% of patients without diagnostic delays [2].50% of patients are initially misdiagnosed.

A good outcome resulted in 80% of those who underwent decompression within 24 hours, as opposed to only 10% of the patients decompressed after 24 hours. Good results can be obtained despite severe neurologic compromise when treated by rapid diagnosis and decompression of the spinal canal. Diagnostic delays were significantly less common during a five-year study period after a decision guideline was developed for all patients who sought care for spinal pain [3]. The decision guideline included prospective evaluation including the history, risk factors assessment and inflammatory markers to diagnose spinal epidural abscess in patients who present to the emergency department with spine pain.

We report a 29–year-old male who presented with five days of high grade fever and loin pain without evidence of the aforementioned predisposing factors.

CASE REPORT

29 UAE male citizen, previously healthy nonsmokerwith no prior history of trauma or any surgical procedure, presented to Dubai hospital Emergency with 5 days of high fever and pain localized in the loin pain was constant and burning in

Corresponding author:* **Faiz Ur RehmanFarooqui
Department of Internal Medicine, Dubai Hospital, Dubai, UAE

nature, non-radiating in character, not relieved by usual analgesics and precipitates on walking, without any urinary or bowel symptoms.

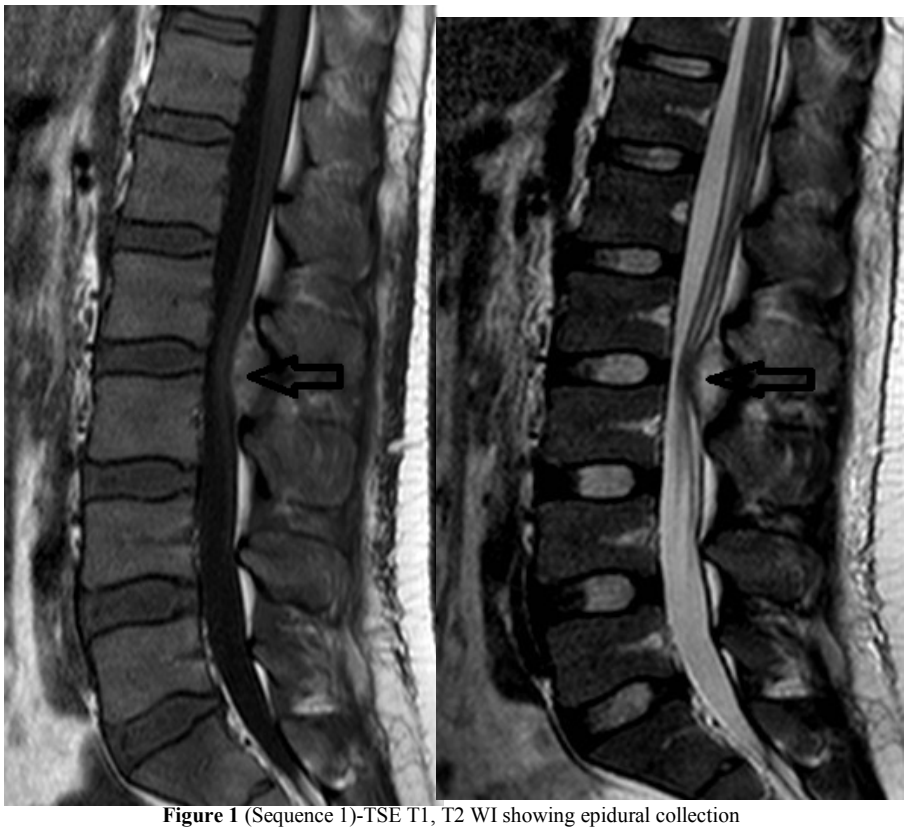

Figure 1 (Sequence 1)-TSE T1, T2 WI showing epidural collection

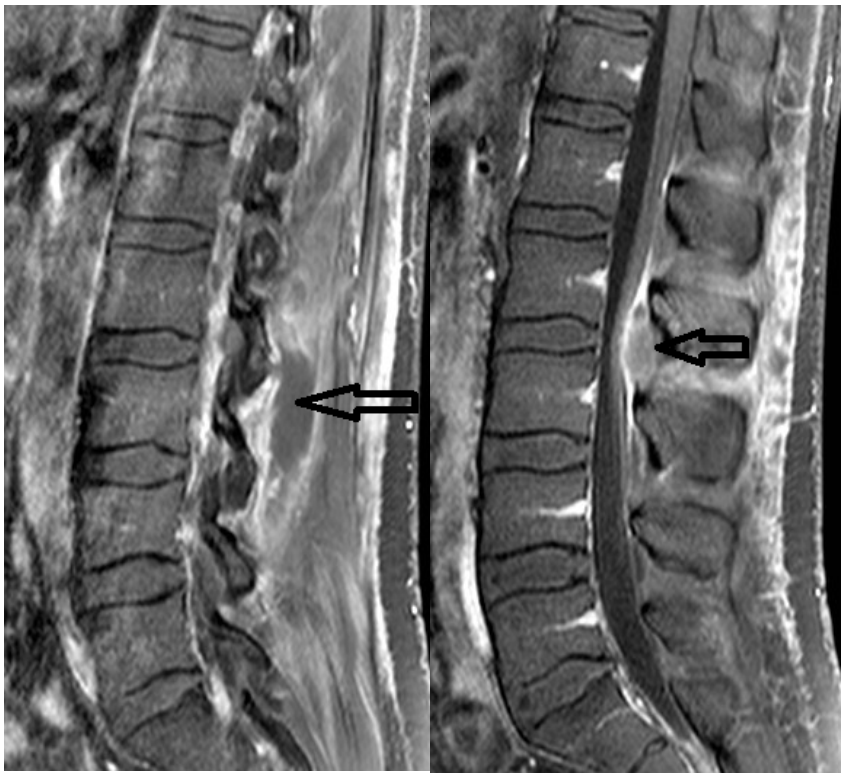

Figure 2 (Sequence 2)-SEQ 2. SPIR T1 WI in sagittal plane showing Para spinal and epidural collections.

One day prior to admission patient visited Emergency of Dubai Hospital with almost similar complaints, was investigated with a significantly high C - reactive protein (140 mg/L), ESR 40 mm/Hr, and Procalcitonin of 2.83ng/ml, with a normal Leucocyte count and Hemoglobin.

Urine routine and biochemistry was essentially normal. He was discharged from Orthopedics after a normal X ray lumbosacral spine. Patient opted to go to a private hospital.

On the day of admission, he was febrile, tachycardic but normotensive. Pain score was 8/10 and was generally looking unwell. Clinical examination was essentially unremarkable

except for burning pain on walking with straight leg raising restricted to 30 degree for both legs.

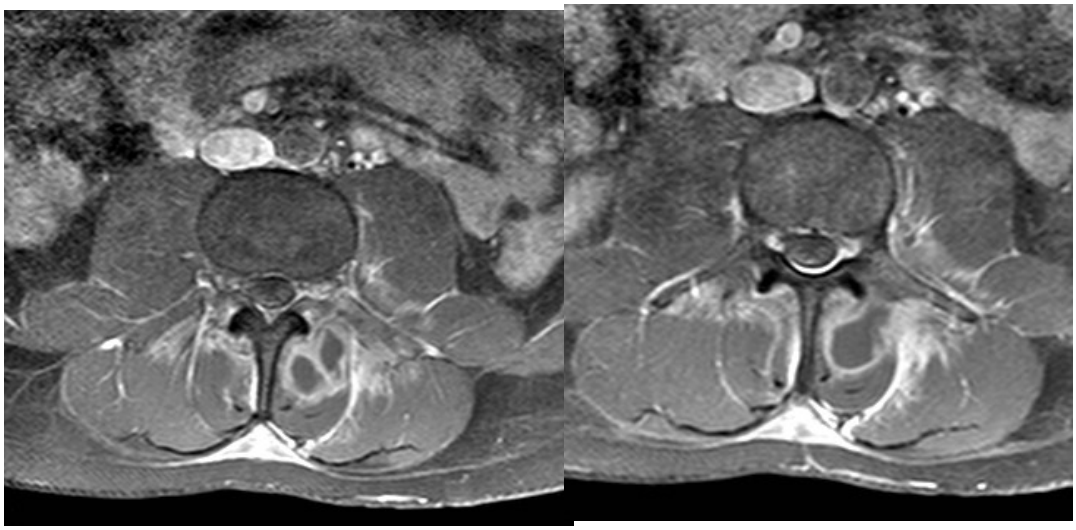

Figure 3 (Sequence 3 A)- SPIR T1 axial fat sat post contrast showing left Para spinal abscess

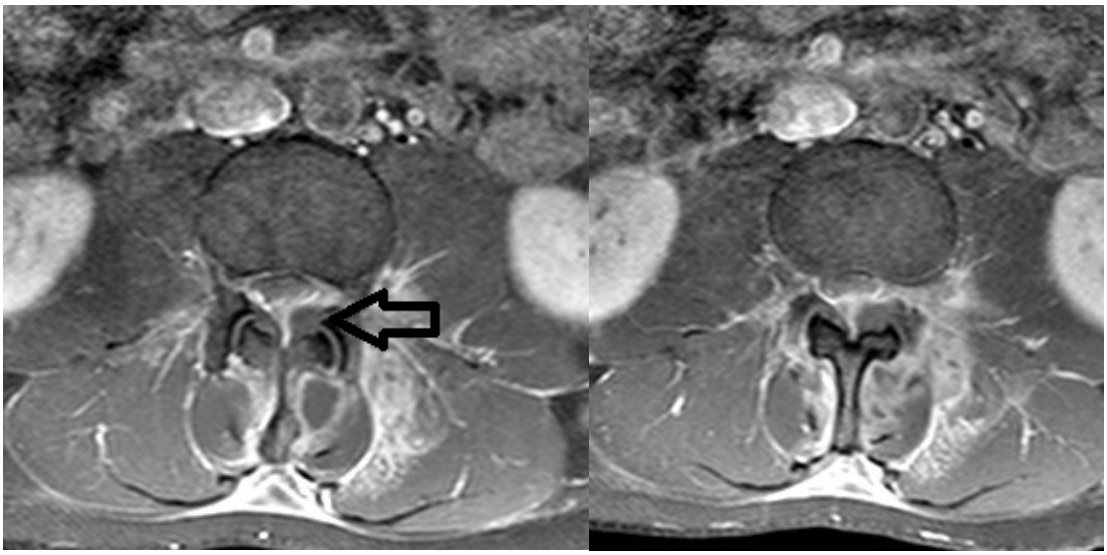

Figure 4 (Sequence 3B)- SPIR T1 axial fat sat post contrast showing left epidural abscess

There was no sensory or motor deficit noticed.Preliminary result of Blood culture sample drawn in ER grew Gram positive cocci.

Methicillin susceptible staphylococcus aureus was cultured after 48 hours and the antibiotics were instituted according to the sensitivity. Transthoracic echocardiogram was normal but the inflammatory markers remained high.

MRI Lumbosacral spine was scheduled on day 6 of admission, as per the consensus by Neuro and Orthopedics surgery, and was reported on day 7 which was finally conclusive of spinal epidural abscess at the level of L2 and L3. Patient was immediately transferred to neurosurgical unit, where laminectomy was done on day 8 of admission with debridement and a drain was left in place. Pus culture was send which was consistent with Methicillin susceptible staphylococcus aureus.

DISCUSSION

Spinal epidural abscess presents as a suppurative process localized between the duramater and the vertebral periosteum within the epidural space. Staphylococcus aureus is the most common causative agent. The proportion of staphylococcus aureus infections that are methicillin-resistant (MRSA) is steadily rising; at one institution, MRSA comprised 40 percent of all Staphylococcus. Aureus[4].

The microorganism reaches the epidural area by direct inoculation through invasive procedures like a puncture, or a definitive connection between sources of infection near to and distant from the vertebral canal. Hematogenous spread into the epidural space is an important pathogenic factor. In published series, it was possible to identify a distant source in 35% of cases. Bacteremia causing or arising from spinal epidural abscess is detected in about 60% of patients[5], is often unclear and in some cases it is not possible to identify the source of infection. In this case, we found no source of infection, near or distant from the vertebral canal. Moreover, history or evidence of invasive procedures was not present in this case.

However, spinal trauma is especially important since it may create a site of entry for the microorganism into the epidural space. Spinal hematomas associated with severe blunt or penetrating spinal trauma represent an important pathogenic factor that may cause development of spinal epidural abscess

and could also explain the potential development of spinal epidural abscess following epidural hematoma.

The patient under discussion was a young and healthy adult without any identifiable cause or any predisposing factor. The pre-operative neurological condition, earlier surgical intervention, appropriate antibiotic therapy guided by the results of blood cultures or a CT-guided needle aspiration of the abscess[6] and intensive rehabilitation are the determinants for outcome in spinal epidural abscess. However, neurological recovery strongly correlates with the degree of initial neurological dysfunction. In this case, the recommended course and duration of antibiotics was instituted and the patient recovered completely with complete resolution of symptoms and normalization of inflammatory markers.

This case presented here is exceptional because of following reasons: 1) the case report is one of the uncommon presentation and diagnosis. 2) There were no predisposing factors and the patient was a young and healthy adult. 3) No source of infection near to or distant from the vertebral canal could be found.

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