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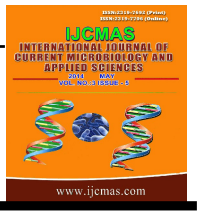

Case Study

ESBL *Escherichia coli* related Discitis and Endotoxemia: as unusual presentation

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Keywords

ESBL
E. coli,
Discitis,
Endotoxic shock,
Conservative treatment

A B S T R A C T

Post operative discitis is not an uncommon disease. But the discussion on its etiology, clinical diagnosis, role of radiology, importance of obtaining culture and the wide array of treatment modality ranging from total conservative to aggressive debridement and stabilization is largely under reported and a consensus yet not agreed upon. Here we report an unusual case of post discectomy multi level discitis presenting with endotoxic shock evoked by extended-spectrum β-lactamase–producing *Escherichia coli* (ESBL *E. coli*) managed with debridement and appropriate antibiotics alone and thus highlighting the importance of obtaining a microbiologic diagnosis. Also we wish to underline that ESBL *E.coli* have not previously been mentioned specifically in the context of discitis complicated with endotoxic shock and the patient been treated conservatively.

Introduction

Septic discitis, generally of a bacterial origin, is an inflammatory process of the intervertebral disc which usually involves the discovertebral junction, and may extend into the epidural space, posterior vertebral elements and paraspinal soft tissues. Most cases are limited to a single site, with less than 10% involving two or more locations (Nelson,1990). Infection may occur in several ways, including hematogenous spread, direct inoculation, and contiguous spread from a local infection. Direct inoculation of bacteria may occur during surgery or as a result of penetrating trauma, puncture wounds, or complex fractures (Lazzarini *et al.*, 2004; Lew *et.al.*, 1997)). Group B streptococcus and enteric gram-negatives such as Escherichia coli are commonly known to cause discitis (Edwards et al. 1978).

E. coli is one of the most common organisms associated with bacteremia, but rarely causes complications under sufficient therapy. However, ESBL-producing *E. coli* infections more often receive inadequate empiric antibiotic therapy and have a higher mortality rate than those infected with non-ESBL-producing strains (Pena et al. 2008). Here we report a case of discitis complicated with endotoxic shock caused by ESBL *E*

coli, a multi drug resistant nosocomial pathogen and the patient been treated conservatively with appropriate antimicrobial therapy.

Case Report

A 62 year male, previously operated for L4-5 PIVD eight months back, readmitted with complaints of fever with chills and rigor, malaise and, pain lower back radiating to both lower limbs. On examination he was febrile, toxic, associated with a fluctuant swelling over lower back suggestive of abscess, tachycardia and Hypotension. Laboratory test revealed elevated ESR and CRP. X–ray LS spine showed features suggestive of lumbar discitis (Fig.1). With a presumptive diagnosis of Multi level Discitis complicated with Endotoxic shock, he was started on broad spectrum antibiotics.

MRI LS spine confirmed the diagnosis with more than 3 level involvement, epidural and peri vertebral collection (Fig.2). Presence of active infection restricted the use of any instrumentation for spinal stabilization and he was subjected to wound debridement only. Debridement was done twice microscopically with minimally invasive approach. Both pus culture and blood culture grew extended spectrum beta lactamase producing *E coli* (ESBL *E coli*). He was given IV antibiotics as per culture sensitivity reports for a total duration of 6 weeks. With appropriate antibiotics his clinical symptoms improved and now 2 years post procedure, all clinical and laboratory manifestations related to the discitis were found to be resolved and he is able to perform all the routine activities. Flexion extension and X ray (Fig.3) reveal no instability of spine.

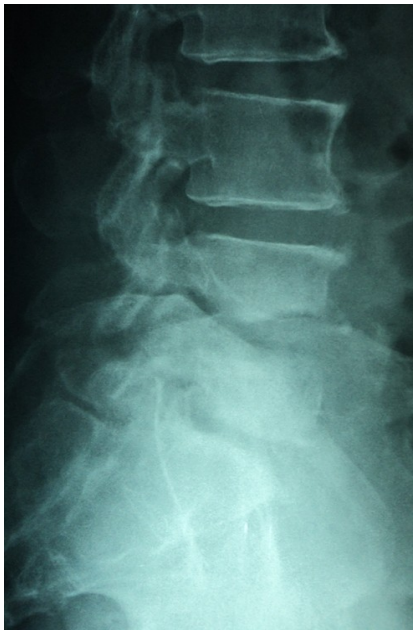

Fig.1 Pre-operative X-Ray LS spine (lateral) showing end plate changes and vertebral involvement L4-S1

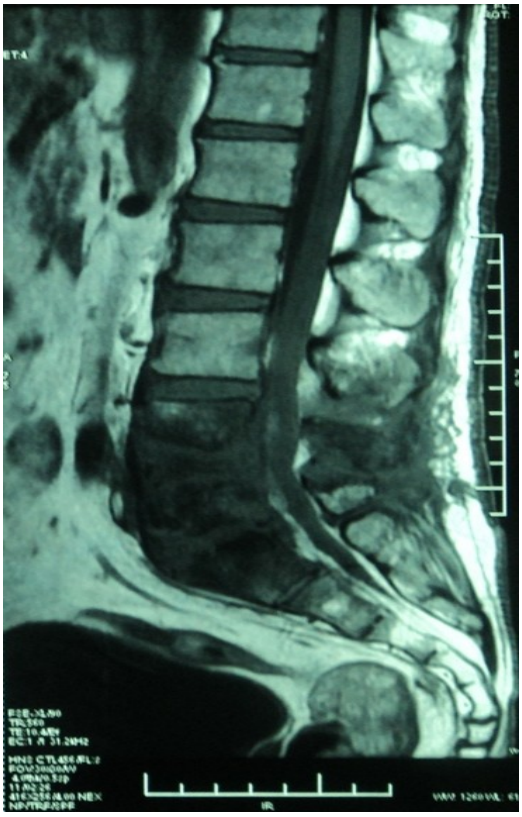

Fig.2 Pre-operative MRI LS spine sagittal (T1) showing hypointense lesion involving L4-5, L5- S1 disc spaces with L4-L5-S1 vertebral body involvement

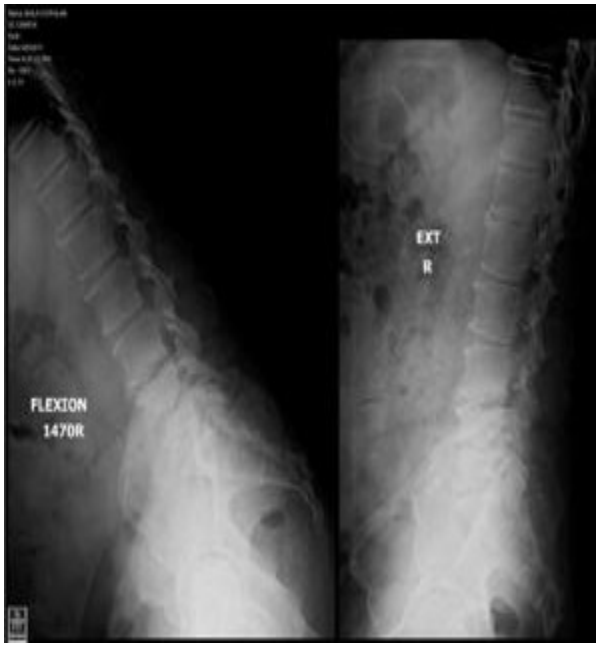

Fig.3 Post operative dynamic X ray LS spine showing no instability

Discussion

Septic discitis is not an uncommon condition and the importance of its early diagnosis and prompt management is well known among surgical fraternity. Importance of precise clinical judgment and role of MRI in view of its sensitivity and specificity in diagnosis of the condition is well acknowledged. Still of paramount importance is the need of obtaining culture(percutaneous/ open) and a discussion on the wide array of treatment modality ranging from total conservative to aggressive debridement and stabilization.

Identification of the causative organism in discitis is imperative, especially in light of increasing resistance patterns. The most common causative organisms isolated from patients with discitis include Staphylococcus aureus, streptococci and E coli (Edwards et al. 1978). Although these pathogens account for the majority of cases, our patient highlights the need for a definitive diagnosis, in view of the multi drug resistant ESBL *E coli* as the causative agent. Infections with ESBL-producing E. coli are most common amongst those who have recently been in hospital or undergone surgical procedures. Our patient had undergone lumbar discectomy, 8 months prior to presentation of discitis, raising the possibility of this procedure being the portal of entry for the nosocomial pathogen.

Because ESBL-producing organisms are frequently resistant to multiple antimicrobial agents, therapeutic options for these infections are severely limited. At the more serious end of the spectrum are the cases where they cause septicemia This case remains unique as the patient developed discitis and was presented with endotoxic shock, a rare intricate association evoked by the ESBL *E coli.*
The presence of active infection restricted the use of any instrumentation for spinal stabilization. Patient was subjected to wound debridement and drainage of pus. Even prior reports recommend that wound debridement is critical in discitis and delays in the procedure are associated with increased complications. (Nelson, 1990, Lazzarini et al. 2004).

Identification of the pathogen may be accomplished through direct culture of debrided tissue and blood so that appropriate antimicrobial therapy can be administered. It is reported that antibiotic therapy in the absence of wound debridement is ineffective (Itokazu et al 1996, McHenry et al,1995). Our patient underwent timely wound debridement and received appropriate antibiotic therapy. Treatment of discitis over several weeks with high doses of parenteral antibiotics is usually successful (McHenry et al, 1995).

This patient responded to cefoperazone sulbactam and Amikacin. Sulbactam, the beta lactamase inhibitors worked well on the ESBL *E coli* strain encountered in this case. He was given antibiotics for 6 weeks with close monitoring of inflammatory markers, such as the erythrocyte sedimentation rate and C-reactive protein which are elevated in more than 90% of discitis patients (Unkila-Kallio 1993) and can be used to ascertain response to therapy.

Conclusion

The case serves as a timely reminder of the risks and possible consequences of discitis caused by multi drug resistant nosocomial pathogens in patients who have undergone prior surgical procedures. Our reported case demonstrates that the definitive diagnosis of discitis should be made based upon bacteriologic examination. The patient was treated conservatively and his spine was stabilized with appropriate antibiotic therapy despite the multi level infection.

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