Bacillus cereus Implicated in Discitis – A Case Report

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Introduction – Discitis

• Inflammation and infection of the intervertebral discs in the spine which can result in debilitating pain and morbidity

• Infection can spread: hematogenous spread and seeding, direct inoculation and less commonly contiguous spread\(^1,2\)

• The most common inciting pathogen is the ubiquitous *S. aureus* due to its prevalence on skin\(^1\)

• More than half of all patients have predisposing comorbidities, most notably diabetes mellitus\(^2\)
Introduction – Presentation & Diagnosis

• **Back pain**, present in 90% of cases\(^2\). The lumbar spine is implicated in 60% of cases and only rarely (10% - 30%) are multiple intervertebral discs involved\(^2\)

• Pain is generally **localized and non-radiating** with point tenderness

• Strength, reflexes and sensation of the lower extremity are usually preserved a minority (20%) of patients also experience paresthesia, weakness or other neurologic deficits consistent with nerve root compression\(^1,2\)

• Findings: disc space narrowing, disc hyperintensity on T2 MRI – otherwise unremarkable findings

Here we present the case of a immuno-stable patient, presenting in an atypical fashion, diagnosed with *B. cereus* discitis, a pathogen rarely reported to cause such disease.
Case Presentation

38-year-old female with a history of left leg radicular pain secondary to lumbosacral disc bulges with foraminal narrowing managed with weekly spinal nerve block injections. She was assessed and consented for decompression and fusion. Prior to the surgery date, she presented to the ER with severe shooting pain, numbness and tingling down the left leg and foot. On examination she had no back tenderness. Motor, sensory, neurological and digital rectal examinations were normal at time of presentation. Two days later developed symptoms of cauda equina. MRI demonstrated increased disc extrusion at L5-S1 compressing the S1 nerve root, in addition to moderate spinal stenosis, and suspected broad right lateral disc protrusion at L4-L5. The patient underwent L4-S1 decompression and fusion. In the operating room, frank pus was observed from one of her bulging discs indicating a discitis. A discectomy was performed. Intra-operative cultures were positive for B. cereus. Blood cultures were negative. The planned interbody fusion was aborted.
Figure 1. T2-weighted, sagittal, MRI findings in our patient demonstrating lack of expected hyperintensity where discitis was found intra-operatively.
Figure 2. Axial MRI findings in our patient.
Discussion

• The yearly incidence of discitis in the U.S. is 0.4 - 2.4/100,000 with a mortality in the range of 2 to 11%\textsuperscript{1}

• Despite an atypical presentation and limited risk factors, our patient was found intra-operatively to have a localized collection of pus which cultured positive for an uncommon pathogen, \textit{B. cereus}, confirming the presence of a discitis

• \textit{B. cereus}: rod-shaped, gram-positive, toxin producing, facultative anaerobe commonly associated with gastrointestinal infections\textsuperscript{4}

• Non-gastrointestinal infections with \textit{B. cereus} have been reported in IV drug users, immunocompromised patients and after surgical interventions\textsuperscript{4}
Discussion

• Central nervous system (CNS) infection with *B. cereus*, although rare, has been reported in cases where there was direct access to the CNS via spinal anesthesia, intrathecal chemotherapy, or ventricular tubes or shunts in the setting of impaired host immunity.

• The colonization of medical devices has been suggested as the source of infection\(^8,9\).

• Our patient had no history of IV drug use, immunocompromise or spinal surgery, however, did have a history of spinal injections.

• We suspect spinal injections entered the disc space and introduced the pathogen.
Conclusion

Here we present a rare case of a patient with discitis with an atypical presentation of radicular pain and cauda equina symptoms, colonized with *B. cereus*, classically causing enteric symptoms. A search of the literature concluded that while *B. cereus* has been isolated from surgical site and central nervous system infections, we believe this is the first explicitly reported case of *B. cereus* discitis with no prior history of spinal surgery or immunocompromise. We suspect spinal injections as the source of inoculation in this case.