

Bacillus Cereus Panophthalmitis: A Rare Complication of Injection Drug Use

¹Menke, Nathan MD PhD FASAM; ¹Smith, Emily LMSW CAADC; ¹Preston, Yolanda RN CARN; ¹DiClemente, Jillian PharmD

¹Michigan Medicine; University of Michigan

Background & Introduction

Endogenous panophthalmitis is a sequela of bacteremia in which pathogens gain access into the eye via the retinal vasculature. In this disease, several risk factors, such as diabetes, immunocompromise, and intravenous drug use have been reported. In endogenous cases, the time course of *B. cereus* endophthalmitis from the initial bloodstream infection to clinical signs is unknown. Thus, a history of injection drug use in patients who present with rapidly developing ocular inflammation is critical to early therapeutic intervention.

Without early treatment, patients with *B. cereus* endophthalmitis have a high chance of permanent vision loss. Clinical signs and symptoms in *B. cereus* panophthalmitis are similar to that of panophthalmitis caused by other organisms, but occur at an accelerated rate. Therefore, the window of therapeutic intervention in *B. cereus* panophthalmitis is quite narrow.

Evolving clinical signs of panophthalmitis may include periorbital swelling, chemosis, proptosis, corneal infiltration, ring abscess, hypopyon, subretinal exudation, retinal hemorrhages, and perivasculitis. *B. cereus* panophthalmitis is an aggressive infection; a delay in treatment beyond six hours post-infection may lead to a substantial loss in retinal function highlighting the critical need for rapid identification and proper treatment for this blinding infection.

Case Description

History: 41 year old female with a past medical history of migraine, severe methamphetamine use disorder (including active injection drug use), fibromyalgia and remote history of opioid dependence presented via transfer with orbital cellulitis and orbital compartment syndrome. Her symptoms started four days prior to admission with mild redness and swelling around her right eye. The pain and swelling rapidly increased and within one day, she was unable to

Case Description (continued)

open the eye. She was seen at an outside hospital and transferred to our institution for a higher level of care. Her CT was read as no abscess; evidence of pre-septal and post-septal cellulitis. The blood cultures from outside hospital grew *Bacillus cereus* from two sets of cultures taken at different times. The patient was started on empiric unasyn and vancomycin.

Physical Exam: Per ophthalmology consult, the right lid/lashes were described as: three plus tense upper lid edema and two plus lower lid edema, upper lid overhanging lower lid, proptosis, warmth and erythema of the upper eyelid with purulent drainage. The conjunctiva/sclera were described as: chemosis overhanging lower lid, unable to open eye due to degree of lid edema (Figure 1). No further exam was performed due to pain.

Laboratory: The patient's labs were significant for white blood cell count of 13.1 K/uL.

Hospital Course: On hospital day one, The patient was emergently taken to the operating room for exam under anesthesia and canthotomy/cantholysis (Figure 2). The patient had poorly controlled pain on a multimodal pain regimen including hydromorphone by mouth. Despite multiple requests, the primary team did not escalate the patient's opioid regimen. The patient removed her eye patch, despite strict instructions not to, and used a Q-tip on her eye. This resulted in globe rupture. On hospital day two, patient underwent orbitotomy with orbital biopsy, conjunctival biopsy with conjunctival resection, ruptured globe repair with uveal repositioning, scleral patch graft over corneal melt.

On hospital day three, the patient was started on a morphine PCA and offered a ketamine infusion, which she refused. The patient continued to use Q-tips on her eye resulting in a second globe rupture. On hospital day four, patient underwent right eye enucleation. Prior to discharge, the patient was converted from full opioid agonist to buprenorphine with well controlled pain.

Conclusion & Discussion

B. cereus panophthalmitis from injection drug use is a rare event, but has significant sight-threatening consequences. A uniquely rapid infection course, high therapeutic failure rate, and poor functional and anatomic outcomes are typical of *B. cereus* panophthalmitis. Ocular features of infection with *B. cereus* panophthalmitis may include severe ocular pain, chemosis of the conjunctiva, periorbital swelling, cells and flare in the aqueous humor, a hypopyon in the anterior chamber, and proptosis of the globe blood culture contaminants.



Figure 1: Right eye edema

Delays in treatment may lead to a substantial loss in retinal function highlighting the critical need for rapid identification and proper treatment for this blinding infection. In patients that inject substances, it is imperative to not dismiss *Bacillus* organisms as blood culture contaminants.



Figure 2: Right eye status post canthotomy/cantholysis

Disclosures:

None

References:

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