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# Conjunctival Hyperemia or Vasodilation and Central Corneal Ulcer in a Neonate

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An 11-day-old girl presented with a worsening corneal opacity of the right eye. The patient had received a diagnosis of conjunctivitis at 6 days of life but failed to respond to treatment with topical erythromycin ophthalmic ointment, 0.5%. The baby was an otherwise healthy girl born at full term. Her perinatal history was significant only for a positive maternal test for group B *Streptococcus agalactiae*, which was treated prior to delivery.

Results of the initial examination were significant for conjunctival hyperemia or vasodilation of the right eye, with a 3 × 4-mm central corneal ulcer. Results of B-scan ultrasonography showed no posterior chamber involvement. Corneal cultures for bacteria, fungi, and herpes simplex virus were obtained. Owing to concern for systemic involvement of group B *S agalactiae*, herpes simplex virus, and other infectious causes, the patient was admitted to the children's hospital for a full sepsis workup. Treatment with topical polymyxin B sulfate-trimethoprim and intravenous ampicillin, cefepime hydrochloride, and acyclovir sodium was initiated. Results of spinal ultrasonography demonstrated spinal cord tethering at L4, preventing lumbar puncture and collection of cerebrospinal fluid for culture.

Two days later, the patient's right eye developed a hypopyon, and its intraocular pressure was elevated (Figure). Anterior chamber fluid was sent for culture. Results of another B-scan ultrasonography showed a normal posterior segment without inflammation. The topical antibiotic eyedrops were changed to fortified vancomycin hydrochloride, 50 mg/mL, and tobramycin sulfate, 14 mg/mL, and topical timolol maleate, 0.5%, and dorzolamide hydrochloride, 2.0%, were added. The following day, the hypopyon worsened.

## Diagnosis

Fungal keratitis caused by *Fusarium falciforme*

## What to Do Next

**B.** Perform corneal biopsy

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## Discussion

Infectious keratitis is a significant cause of ocular morbidity worldwide.[1–3] In pediatric populations, ocular trauma is the most common predisposing factor to microbial keratitis.[2,3] Neonates are a unique population for corneal infections because they do not present in a similar manner as older children and adults; a corneal defect is often the first symptom described by the parents, followed by discharge and tearing.[1] Prior studies postulate that lower concentrations of immunoglobulin A and lysozyme in neonates increase their susceptibility to corneal infections.[4] Keratitis typically responds to topical antibiotics or systemic antivirals; however, the development of a hypopyon and the lack of improvement after potent broad-spectrum antibiotics and antivirals should lead to a revised differential diagnosis to include fungal pathogens.

*Fusarium* species are filamentous fungi that are well-described pathogens responsible for keratitis, with a reported prevalence ranging from 10% to 75% of all cases of fungal keratitis.[5] Because *Fusarium* species are found in soil and on plants, the most common predisposing factor for keratitis is ocular trauma with vegetable matter.[5] Patients living in a rural environment or who are engaged in an agricultural occupation are at higher risk for keratitis.[6] Climate and geographical location play an important role in the prevalence of fungal species, and *Fusarium* is the prevailing isolate in tropical climates.[5,6] In south Florida, a tropical climate, it was reported that extended use of contact lenses constituted ocular trauma and predisposed to *Fusarium* infection.[7] Other factors associated with *Fusarium* infections are nasolacrimal duct obstruction, systemic disease such as diabetes, and corticosteroid use.[5,8,9] Although exceptionally rare in neonates, potential risk factors for *Fusarium* keratitis in children include prematurity, prolonged stay in the neonatal intensive care unit, ocular malformations, and maternal infections.[1]

Rapid diagnosis of *Fusarium* is paramount because the infection is often severe and penetrates into the anterior chamber.[9] Fungal cultures may grow within 3 to 4 days; however, a corneal biopsy (choice B) is the best option after initial cultures return negative results because histopathologic studies and microbiological evaluation of the specimen may yield positive results.[9] Biopsy should be performed prior to initiating prednisolone eyedrops (choice D) because corticosteroids are contraindicated for fungal pathogens.[9] Performing another anterior chamber paracentesis procedure and culture (choice A) would likely below yield because this test was previously performed and thus would be unlikely to yield new clinical information. Results of posterior segment ultrasonography that show a clear vitreous make endophthalmitis less likely; therefore, an injection of intravitreal antibiotics (choice C) would not be warranted.

Natamycin is first-line treatment of filamentous fungal infections. Amphotericin B may also be considered. *Fusarium* species are notoriously difficult to treat owing to their relative resistance to most azole medications. However, voriconazole has been shown to be efficacious and may be used independently or in conjunction with natamycin in refractory cases or in cases of deep stromal and anterior chamber invasion. Surgical intervention may be necessary for cases involving the anterior chamber or when medical management fails.[8]

## Patient Outcome

The patient underwent corneal biopsy, yielding the diagnosis of *F falciforme*. She started treatment with natamycin, 5%, eyedrops and has continued to improve since hospital discharge. Owing to the central location of the corneal scar, she is undergoing amblyopia therapy with phenylephrine hydrochloride, 2.5%, eyedrops to dilate the pupil around the opacity in the affected eye and patching of the contralateral eye.

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**WHAT WOULD YOU DO NEXT?**

**A.** Perform another anterior chamber paracentesis procedure and culture

**B.** Perform corneal biopsy

**C.** Inject intravitreal antibiotics

**D.** Start prednisolone eyedrops

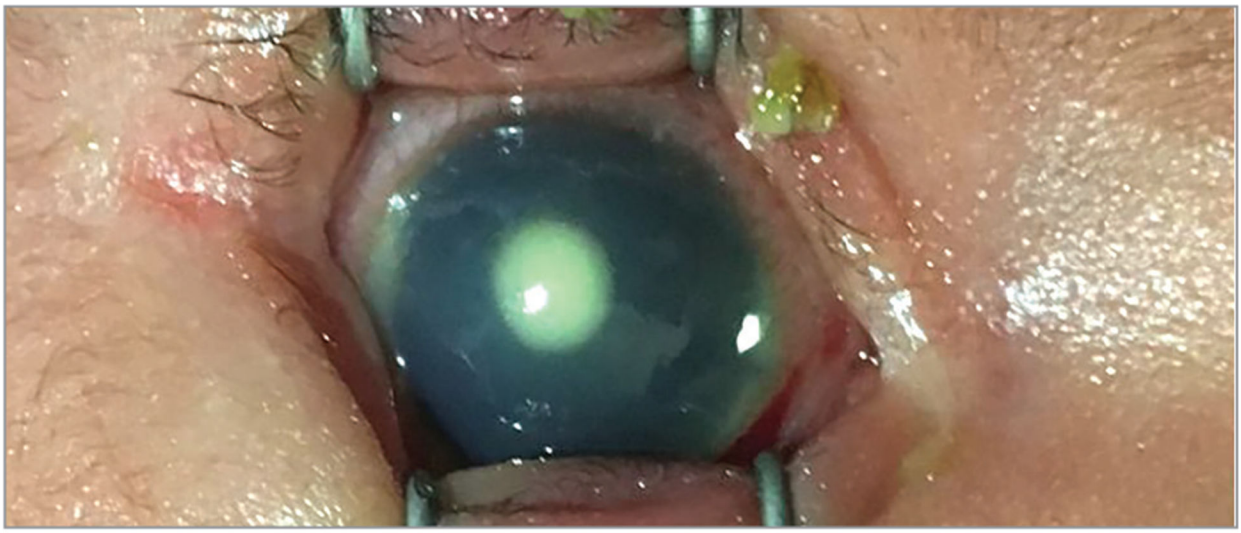

**Figure.**

Photograph of the right eye demonstrating a central corneal infiltrate and large temporal layered hypopyon.