

## Endogenous *Listeria monocytogenes* Endophthalmitis without Gastrointestinal Illness

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### Abstract

**Purpose:** To report a case of endogenous endophthalmitis caused by *Listeria monocytogenes* without preceding gastrointestinal symptoms.

**Methods:** Retrospective case report.

**Case Report:** A 47-year-old man presented with pain, photophobia, and decreased vision in his left eye (OS) for 2 weeks. His visual acuity (VA) at presentation was HM OS with 1 mm hypopyon. Anterior segment inflammation continued to worsen despite initiation of topical and oral steroids. The work up for autoimmune etiologies was negative. The patient was further evaluated for infectious etiology and administered with intravitreal injections of Ceftazidime, Vancomycin and Voriconazole and with intravenous Fluconazole and broad-spectrum antibiotics. Anterior chamber cultures returned positive for *Listeria monocytogenes*. Patient began 4 weeks Moxifloxacin and Bactrim and at 19 days post-op patient's VA was 20/50 OS without signs of active inflammation. After undergoing cataract surgery 6 months after initial presentation, VA in the left eye improved to 20/30. At 1-year post-op the patient's VA was 20/20 OS.

**Conclusion:** *Listeria monocytogenes* is a rare cause of endophthalmitis and typically spreads to the eye hematogenously as a secondary site of infection. This case demonstrates that *L. monocytogenes* can also present with the eye as the primary site of infection in an immunocompetent patient.

**Keywords:** Endophthalmitis; *Listeria monocytogenes*

### Abbreviations

OS: Left Eye; OD: Right Eye; VA: Visual Acuity; HM: Hand Motion; CF: Count Finger; AC: Anterior Chamber; IOP: Intraocular Pressure

### Introduction

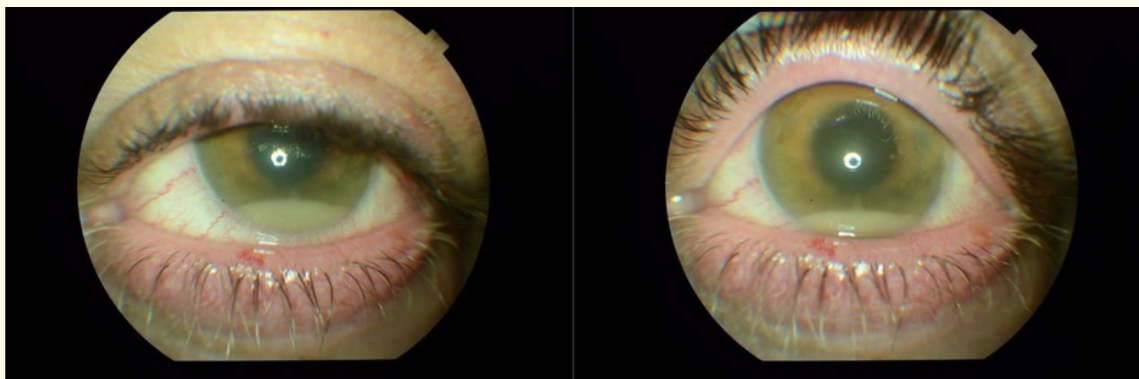
Bacterial endophthalmitis is a rare intraocular infection that often leads to poor visual prognosis. Most cases are exogenous, secondary to intraocular surgery, intravitreal therapy, and penetrating trauma. Endogenous or metastatic endophthalmitis is caused by hematogenous spread to the eye and is usually associated with other foci or infection, however it can occur alone. Timely diagnosis and treatment are crucial for preserving vision, however endogenous endophthalmitis is commonly misdiagnosed at initial presentation. Visual outcomes are typically poor with most cases leading to blindness, though Gram-negatives are more likely to retain useful vision, i.e. CF or better. Pathogenesis of the infectious agent is based on size of the inoculum, immunodeficiency and comorbid disease of the patient, and organism virulence [1]. *L. monocytogenes* infection is caused by consumption of unpasteurized or package milk products and meat, contaminated vegetables, or exposure to farms. Patients typically present with mild febrile gastroenteritis, and rarely does it progress to invasive disease unless the patient is immunocompromised, elderly, or pregnant [2]. Ocular listeriosis is rare, and its most common

manifestation is conjunctivitis, however it can also present as keratitis, sclerokeratitis, endophthalmitis, or acute chorioretinitis [3]. In a systematic review on *L. monocytogenes*-associated endophthalmitis, Chersich, *et al.* report the median patient age was 61 with a range from 24 to 88, with 50% of patients immunosuppressed secondary to cancer, diabetes mellitus, or long-term systemic anti-inflammatory therapy. At presentation the affected eye was blind in 85% of cases, and at resolution 39% remained blind in the affected eye while 33% achieved normal vision [4].

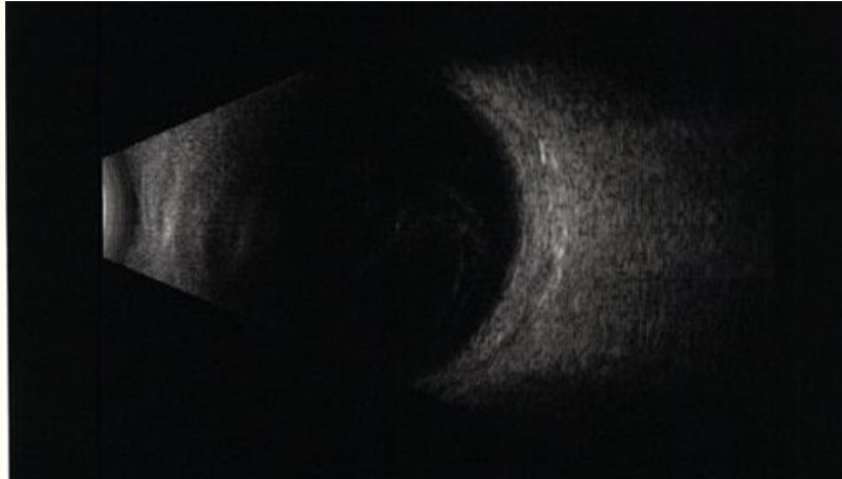
There have been approximately 29 case reports of *L. monocytogenes* endophthalmitis reported in the current literature, but few of these demonstrated the eye as the only known site of infection. We report a case of endogenous *Listeria monocytogenes* endophthalmitis with the eye as the primary site of infection.

### Case Presentation

47-year-old man with positive medical history for hypertension, controlled with medication, and negative pertinent ocular history presented with pain, photophobia and decreased vision in his left eye for 2 weeks. He reported chills, subjective fever, and night sweats beginning 1 day prior to onset of ocular symptoms. On presentation, his visual acuity (VA) was HM in the left eye (OS) and 20/20 in the right (OD). Intraocular pressure was 26 mm Hg OS and 28 OD. At this time the patient was already using Durezol q2h, Cyclogyl tid, Combigan qid, Travatan qhs, Lotemax qhs, Valacyclovir 3g qday and Medrol 4mg Dosepak as prescribed 4 days prior by his referring ophthalmologist. He was given the diagnosis of anterior uveitis. AC biopsy cultures were negative at that time for HSV, VZV, CMV. On slit lamp exam OS showed 4+ cell and fibrin in the anterior chamber, hypopyon, and posterior synechiae, with poor view of the posterior segment (Figure 1). B-scan showed no retinal detachment, vitritis, or retinal and subretinal lesions (Figure 2). He denied family or personal history of autoimmune disease. The patient was advised to discontinue Lotemax and continue all other eyedrops as prescribed. Oral steroids were increased. A full workup was initiated for possible autoimmune and infectious etiology. The patient presented to the Emergency Department 2 days later with worsening eye pain, swelling, and redness, and recurrent subjective fever. Upon admission, patient was HM OS with 1 mm hypopyon. Given his presentation and worsening course despite topical and oral steroid treatment, a presumptive diagnosis of endogenous endophthalmitis was made, and intravitreal injections of Vancomycin, Ceftazidime and Voriconazole were administered, as well as intravenous Fluconazole and broad-spectrum antibiotics for 72 hours. Two anterior chamber eye cultures taken at the time of admission and both returned positive for *Listeria monocytogenes*. The patient reported eating soft cheeses at a high-end restaurant within a week of the eye symptoms but denied any gastrointestinal symptoms. Given a penicillin allergy, patient was started on 4-week systemic therapy of Moxifloxacin 400mg and Bactrim (800mg SMX + 160mg TMP). Blood cultures remained negative for *Listeria* during his hospitalization. At 19 days post intravitreal injection, the patient presented 20/50 OS with rare cell and fibrin in the anterior chamber. IOP was 17 and patient reported minimal discomfort (Figure 3). Patient underwent nuclear sclerotic cataract extraction with posterior chamber intraocular lens implantation 6 months after his initial presentation. His visual acuity improved to 20/30 with no signs of active inflammation 1-month after cataract surgery, and at 1-year from his initial presentation his visual acuity was 20/20.



**Figure 1:** Anterior segment photograph of left eye at presentation shows lower lid and corneal edema, white hypopyon and mild conjunctival injection.



**Figure 2:** B-scan of the left eye at presentation shows no masses nor retinal detachment.



**Figure 3:** Anterior segment photograph of the left eye 19 days post-op shows improving corneal and lower lid edema and resolved hypopyon.

## Discussion

Bajor, *et al.* [5] reviewed all published reports of endophthalmitis caused by *Listeria monocytogenes* from 1967 to May 2014. Among these cases, 37% occurred in immunocompromised patients; 19% occurred in patients with chronic diseases including sacroiliitis, diabetes mellitus, hypothyroidism, and previous history of cancer; and 22% occurred in elderly patients. Of the 27 patients reported, 7 experienced flu-like symptoms. Patients with a high VA at presentation showed improvement, and in some cases those with low VA still showed some improvement. Those with a starting VA below 0.05 had a chance of only 35.3% of improvement. Poor visual outcome is common, and often secondary to delay in diagnosis given its rarity and similarities to sterile anterior uveitis at initial presentation. Common symptoms at presentation include decreased visual acuity, increased intraocular eye pressure, fibrinous anterior chamber reaction, and dark hypopyon [3,6]. First line treatment for *L. monocytogenes* infections involving the CNS is amoxicillin and gentamicin [7].

We report a case of endogenous *Listeria monocytogenes* endophthalmitis in a 47-year-old male with no prior ocular history and past medical history positive only for hypertension. His fevers, chills preceding the ocular symptoms suggested a transient bacteremia that his body cleared, but unfortunately seeded to his left eye. *L. monocytogenes* is a rare cause of endogenous endophthalmitis, and few cases have been reported with the eye as the primary site of infection.

*Listeria monocytogenes* should be considered as a differential diagnosis even in immunocompetent patients with no systemic prodrome such as gastroenteritis.

### **Conclusion**

*Listeria monocytogenes* is a rare cause of endophthalmitis and typically spreads to the eye hematogenously as a secondary site of infection. This case demonstrates that *L. monocytogenes* can also present with the eye as the primary site of infection in an immunocompetent patient.

### **Financial Statement**

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