Management of Suspected Endogenous Endophthalmitis

A proper workup and timely interventions can help to limit vision loss.

BY THEODORE LENG, MD, MS

As retinal specialists, we may be called upon to consult on inpatients with decreased vision. At the bedside, a thorough history and ocular exam should be performed with special sensitivity to the possibility of endogenous endophthalmitis. Although it is a rare condition (the reported incidence is about 5 per 100,000 hospitalized patients), if not promptly diagnosed and treated, the result may be permanent vision loss.

PATIENT HISTORY
The history should focus on the reason for hospital admission, the presence of any positive blood cultures, and evidence of immune suppression. Although a history of HIV/AIDS, organ transplantation, leukemia, lymphoma, and other cancers are the usual red flags for immunosuppression, other potential risk factors for endogenous endophthalmitis are the presence of diabetes mellitus, indwelling catheters, recent surgery, a history of IV drug use, pregnancy, a history of gynecologic procedures, and parenteral nutrition.

CLINICAL EXAMINATION
The examination should concentrate on checking for the presence of intraocular inflammation. Although it is very difficult to check for anterior chamber cell in a bed-bound patient, the posterior pole is where one should focus when endophthalmitis is suspected. Immunosuppressed patients often have difficulty mounting an inflammatory reaction, so vitritis (as well as hypopyon) may be minimal. In these cases, the most important features to identify would be the presence of whitish choroidal or chorioretinal lesions and white, plumate vitreous globules (sometimes termed “puff balls”). Be aware that in this patient population it is often difficult to distinguish between infection and infiltration (such as a neoplastic process) or the sequelae of pancytopenia.

If a choroidal or vitreous lesion is detected and endogenous endophthalmitis is a concern, systemic evaluation is imperative to determine a primary site of infection. Inherent in its definition, endogenous (or “metastatic”) endophthalmitis arises after hematogenous spread circumvents or overwhelms the blood brain-barrier. For this reason, blood cultures are recommended, although their reported sensitivity varies. Some studies have reported positive cultures in as many as 75% of patients, while others cite no identified primary infectious focus in more than 40% of cases.

DIAGNOSTIC TESTS/TREATMENTS
The infectious agents underlying endogenous endophthalmitis are bacterial in approximately half of the cases and fungal in the remaining half. Although the relative proportion of cases any given infectious agent causes varies widely with region, in the United States bacterial endophthalmitis is caused mainly by Streptococcus (20%), Staphylococcus (30-50%), and Escherichia coli (30%). In contrast, Klebsiella pneumoniae is the primary cause in Asia, accounting for nearly 80% of cases. The majority of fungal cases are caused by Candida, which accounts for approximately 60% of cases. Following this, Aspergillus is
the second most common cause.10

A vitreous tap and injection should be performed with antibacterial or antifungal agents (depending on the suspected organisms) if the vitreous is involved. Generally, vancomycin (1 mg) can be used to cover gram-positive organisms, ceftazidime (2.25 mg) for gram negatives, and either amphotericin B (5 mcg) or voriconazole (0.1 mg) for suspected fungal organisms. Avoid intravitreal steroids if a fungal cause is on your differential.

Consultation with the infectious disease service should be obtained and systemic antibiotics strongly considered. Daily fundus exams should be performed. If the patient’s clinical course worsens, a diagnostic vitrectomy should be considered. If indicated, obtain an undiluted specimen for staining and culture. Be sure to also send the cassette to the lab. Repeat administration of antibacterial and antifungal agents should be given at the conclusion of the vitrectomy.

Endogenous endophthalmitis can be a vision-threatening condition. A proper workup and timely interventions can help to limit vision loss.

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