Chronic Postoperative Endophthalmitis

Clinical Findings

Chronic postoperative endophthalmitis has a distinctive clinical course, with multiple recurrences of chronic indolent inflammation in an eye that has previously undergone surgery, typically cataract extraction. Unlike the explosive onset of acute postoperative endophthalmitis, in chronic disease the initial inflammation may occur at any point during the postoperative course; however, it is often delayed by many months. Chronic anterior segment inflammation, hypopyon, keratic precipitates, intracapsular plaques, and/or vitritis may be present (Fig 14-1). Inflammation may respond to corticosteroid therapy but often recurs after corticosteroids are tapered. In the most severe cases, inflammation may cause corneal decompensation or even iris neovascularization.

Chronic postoperative endophthalmitis can be divided into bacterial and fungal varieties. Chronic postoperative bacterial endophthalmitis is most commonly caused by *Cutibacterium acnes* (formerly *Propionibacterium acnes*). Gram-positive bacteria with limited virulence (eg, *Staphylococcus epidermidis* and *Corynebacterium* species), gram-negative bacteria, or *Mycobacterium* species may also be causative agents. *C acnes,* a commensal, anaerobic, pleomorphic, gram-positive rod, is commonly found on the eyelid skin or conjunctiva. The organism may also sequester itself between an intraocular lens (IOL) implant and the posterior capsule. In this relatively anaerobic environment, *C acnes* grows and forms colonies, which manifest as whitish plaques between the posterior capsule and the IOL implant. Nd:YAG capsulotomy may trigger chronic endophthalmitis in these eyes by liberating the organism into the vitreous cavity, resulting in more severe vitreous inflammation and exacerbation of the underlying infection.

Chronic postoperative fungal endophthalmitis may have a presentation similar to that of *C acnes–related disease*. Numerous fungal organisms have been implicated in this chronic inflammatory process, including *Candida parapsilosis, Aspergillus flavus, Torulopsis candida,* and *Paecilomyces lilacinus,* as well as *Verticillium* species. Certain clinical signs may be helpful in differentiating a fungal from a bacterial etiology, including the presence of corneal infiltrate or edema, a mass in the iris or ciliary body, or development of necrotizing scleritis. The

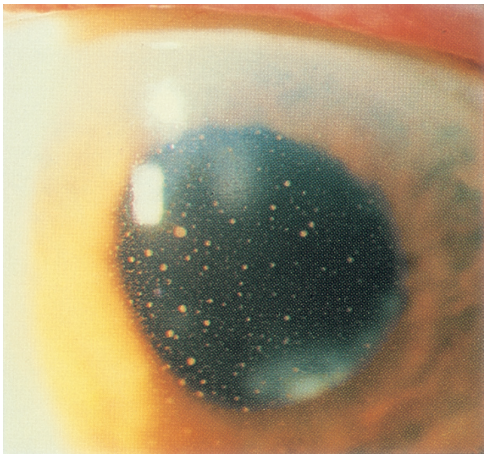

Figure 14-1 Chronic postoperative endophthalmitis caused by *Cutibacterium acnes* infection. Anterior segment photograph shows keratic precipitates and white plaque in the capsular bag. *(Courtesy of David Meisler, MD.)*

presence of vitreous snowballs with a "string-of-pearls" appearance in the vitreous may also be indicative of a fungal infection. The intraocular inflammation may worsen after topical, periocular, or intraocular corticosteroid therapy, which should automatically raise suspicion for a fungal infection.

Maalouf F, Abdulaal M, Hamam RN. Chronic postoperative endophthalmitis: a review of clinical characteristics, microbiology, treatment strategies, and outcomes. *Int J Inflam*. 2012:313248. doi:10.1155/2012/313248

Shirodkar AR, Pathengay A, Flynn HW Jr, et al. Delayed- versus acute-onset endophthalmitis after cataract surgery. *Am J Ophthalmol*. 2012;153(3):391–398.e2.

Diagnosis

The diagnosis of chronic postoperative endophthalmitis is based on clinical suspicion and confirmed by obtaining aerobic, anaerobic, and fungal cultures of intraocular fluids. The aqueous, capsular plaques (if present), and vitreous should be sampled using needle aspiration or pars plana vitrectomy. Gram and fungal stains should also be obtained. The value of such stains should not be underestimated, especially in cases of fungal endophthalmitis. In addition, polymerase chain reaction (PCR) testing with primers for *C acnes* and pan-fungal and pan-bacterial targets may be helpful. The bacterial and fungal stains or PCR may yield information rapidly, enabling the clinician to tailor therapy and improve clinical prognosis long before the results of the cultures become positive. Because of the slow-growing and fastidious nature of the organisms that cause chronic endophthalmitis, cultures must be retained by the microbiology laboratory for 2 or more weeks. If initial cultures are negative for infection but clinical suspicion remains high, cultures may need to be repeated.

The differential diagnosis of chronic postoperative endophthalmitis includes noninfectious causes such as lens-induced uveitis (from retained cortical material or retained intravitreal lens fragments), uveitis-glaucoma-hyphema syndrome (IOL malposition leading to iris chafing and intraocular inflammation), sympathetic ophthalmia (if the fellow eye has had prior surgery or trauma), and masquerade syndromes such as vitreoretinal lymphoma. See the Clinical Pearl for the differential diagnosis of chronic postsurgical intraocular inflammation.

Lai J-Y, Chen K-H, Lin Y-C, Hsu W-M, Lee S-M. *Propionibacterium acnes* DNA from an explanted intraocular lens detected by polymerase chain reaction in a case of chronic pseudophakic endophthalmitis. *J Cataract Refract Surg*. 2006;32(3):522–525.

Meisler DM, Mandelbaum S. *Propionibacterium*-associated endophthalmitis after extracapsular cataract extraction: review of reported cases. *Ophthalmology*. 1989;96(1):54–61.

CLINICAL PEARL

The differential diagnosis for chronic postoperative intraocular inflammation includes the following conditions:

- persistent postoperative noninfectious inflammation
- chafing by an intraocular lens, including uveitis-glaucoma-hyphema syndrome
- viral anterior uveitis
- chronic infectious endophthalmitis