

Cytomegalovirus (CMV) Retinitis

A Patient Education Monograph prepared for the American Uveitis Society
by Jennifer E. Thorne, MD
Wilmer Eye Institute
Johns Hopkins University School of Medicine
Baltimore, MD, USA

January 2003

NOTE: The opinions expressed in this monograph are those of the author(s) and not necessarily those of the membership of the American Uveitis Society, its leadership, or the Editorial Board of UveitisSociety.org. All medical decisions should be made in consultation with one's personal physician.

Introduction

Cytomegalovirus (CMV) retinitis is an infection of the [retina](#), located in the back of the [eye](#). Untreated, CMV retinitis leads to progressive destruction of the [retina](#) and blindness. CMV retinitis typically affects patients who have severely impaired [immune systems](#), and is most frequently diagnosed in patients with the [acquired immune deficiency syndrome \(AIDS\)](#). Patients with [AIDS](#) who have [CD4+ T-cell counts](#) that are below 50 cells per microliter are at the greatest risk for developing CMV retinitis.

History

Before [highly active antiretroviral therapy \(HAART\)](#) was used to treat patients with [AIDS](#), CMV retinitis was one of the most common [opportunistic infections](#), affecting 30% of patients with AIDS. Although use of HAART has decreased the number of patients being diagnosed with CMV retinitis by 75%, CMV retinitis still remains a common ocular complication in AIDS. Prior to the use of HAART, patients with AIDS who developed CMV retinitis required chronic treatment to prevent reactivation of the disease, further destruction of the retina, and blindness.

Course of Disease

Patients may notice symptoms such as floaters (spots seen in the vision), flashing lights, blurry vision, or loss of side vision. Often, however, patients have no ocular symptoms. This latter fact is the basis for the recommendation by many experts that dilated eye examinations be performed every three to four months by an ophthalmologist in patients who are at highest risk for the infection (e.g., patients with AIDS and CD4+ T-cell counts below 50 cells/microliter).

Diagnosis and Testing

The diagnosis of CMV retinitis typically is made based on the clinical findings seen on a dilated eye examination performed by an [ophthalmologist](#). The findings seen on eye examination typically distinguish CMV retinitis from other infectious diseases that affect the retina such as syphilis, toxoplasmosis, and acute retinal necrosis caused by either the herpes simplex or herpes

zoster virus. Blood tests, imaging tests, and biopsies *usually* are not necessary to establish the diagnosis of CMV retinitis.

Treatment

Treatment for CMV retinitis can vary from pills to intravenous medicine to injections into the eye to a surgical implant. Currently, the ganciclovir implant, a surgical implant that is sewn into the back of the eye and releases a continuous dose of medicine to control the CMV infection, is one of the most common treatments for CMV retinitis. The implant is convenient for patients because one implant can last for six or more months without recurrence of the infection. The other common treatment currently given is oral valganciclovir, which is converted to ganciclovir in the body. Other treatments such as intravenous (by vein) ganciclovir, foscarnet, or cidofovir are used less commonly. Foscarnet or cidofovir given by vein or foscarnet or formivirsen given as an injection directly into the eye may be given to patients whose CMV retinitis is resistant to ganciclovir treatment.

Cause of Condition

CMV retinitis is caused by the cytomegalovirus, a member of the herpes virus family. In people with normal [immune systems](#), this virus may cause no symptoms or may cause mild flu-like symptoms, which are self-limited and require no treatment. The virus may then lie dormant in a patient's body—without causing disease—indefinitely. A large number of people have been exposed to the cytomegalovirus and have had no ill effects from it. However, when a person's immune system is severely depleted or suppressed, cytomegalovirus may reactivate and cause an active infection in the retina of the eye or in other tissues such as the gastrointestinal tract.

Prognosis

Prior to [HAART](#), the prognosis for patients with CMV retinitis was guarded and many individuals lost vision. Chronic, lifetime treatment was needed. However, as the use of HAART has become common, the prognosis for patients with CMV retinitis has improved. In many cases, patients who have immune recovery from treatment with HAART are able to stop anti-CMV therapy without having recurrences of the infection. Unfortunately, any damage to the retina caused by CMV retinitis is permanent regardless of HAART; so early detection of the disease remains critical to the preservation of patients' vision. Finally, the immune recovery seen in some patients with CMV retinitis taking HAART may cause a new ocular complication, immune recovery uveitis, which may cause loss of vision from [cystoid macular edema](#) or other complications. Immune recovery uveitis can be treated with anti-inflammatory drugs, similar to other forms of ocular inflammatory disease.

Research and Future Outlook

Current research efforts for CMV retinitis are aimed at: 1) characterizing CMV retinitis and the outcomes in treatment during the era in which [HAART](#) has been used commonly; and 2) better understanding the risk factors for and outcomes of CMV retinitis that is resistant to treatments for the infection.