

# Cytomegalovirus retinitis in an immunocompetent host after complicated cataract surgery



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## ABSTRACT

**Purpose:** To report a case of an immunocompetent patient who developed cytomegalovirus (CMV) retinitis after complicated cataract surgery resulting in aphakia.  
**Observations:** A 67-year-old man with type 2 diabetes developed retinitis six months after cataract surgery that resulted in aphakia. Anterior chamber DNA testing was positive for CMV. Comprehensive systemic work-up revealed no immune insufficiency. The retinitis was successfully treated with intravitreal foscarnet and extended oral valgancyclovir treatment, however, he subsequently developed rhegmatogenous retinal detachment.  
**Conclusion and importance:** CMV retinitis may occur in immunocompetent patients in the setting of aphakia and prolonged topical steroid use.

## 1. Introduction

Viral retinitis is a significant cause of severe vision loss. While acute retinal necrosis (ARN) is usually seen in immunocompetent individuals, progressive outer retinal necrosis and cytomegalovirus (CMV) retinitis are typically associated with immunocompromised states, most commonly due to human immunodeficiency virus (HIV). We report a case of cytomegalovirus retinitis in an immunocompetent host after cataract surgery.

### 1.1. Case report

A 67-year-old man presented for pain in his left eye six months after complicated cataract surgery without lens placement. He had a history of diabetes mellitus type 2 (DM2), hypertension and coronary artery disease. He was born in Pakistan and has been living in the United States for over a decade. His past ocular history was notable for bilateral proliferative diabetic retinopathy with macular edema status post focal laser in the right eye and a series of aflibercept injections in both eyes, with last treatment over 1 year prior to presentation. He had developed aphakic bullous keratopathy in the left eye post-operatively, which was treated with prednisolone acetate 1% four times a day and sodium chloride 5% six times a day for six months. He did not report any change in vision from post-operative baseline.

On examination best-corrected visual acuity was 20/25 OD and 20/

500 OS. The intraocular pressure was 13 mmHg and 17 mmHg respectively. Slit lamp examination (SLE) of the right eye was unremarkable and dilated funduscopy examination (DFE) was notable for focal laser scars and rare microaneurysms. SLE of the left eye revealed large bullae and diffuse corneal edema but no appreciable anterior chamber cell and no keratic precipitates. DFE of the left eye was limited by anterior segment pathology but showed dense retinal whitening associated with hemorrhage along the superotemporal arcade and extending peripherally (Fig. 1, A). There was no significant vitritis appreciated.

Anterior chamber paracentesis was performed which returned positive for CMV DNA and negative for herpes simplex (HSV) and varicella zoster (VZV) via polymerase chain reaction (PCR). Systemic infectious work-up found low-positive quantiferon gold and negative RPR, HIV, and serum CMV PCR. CD4 count was normal and hemoglobin A1c was 9.7%. He received intravitreal foscarnet 2.4 mg/0.1mL on presentation and was started on valgancyclovir 900 mg PO BID for 21 days induction followed by 900 mg daily for four months given adequate intravitreal penetration of valgancyclovir.<sup>1</sup> Infectious disease consultation did not identify any occult immunosuppressed state and deemed the low-positive quantiferon gold clinically insignificant.

After 4 months of treatment valgancyclovir was stopped, the retinitis appeared clinically inactive and the patient underwent successful Descemet Stripping Automated Endothelial Keratoplasty and secondary lens placement. Post-operative vision did not improve beyond hand-

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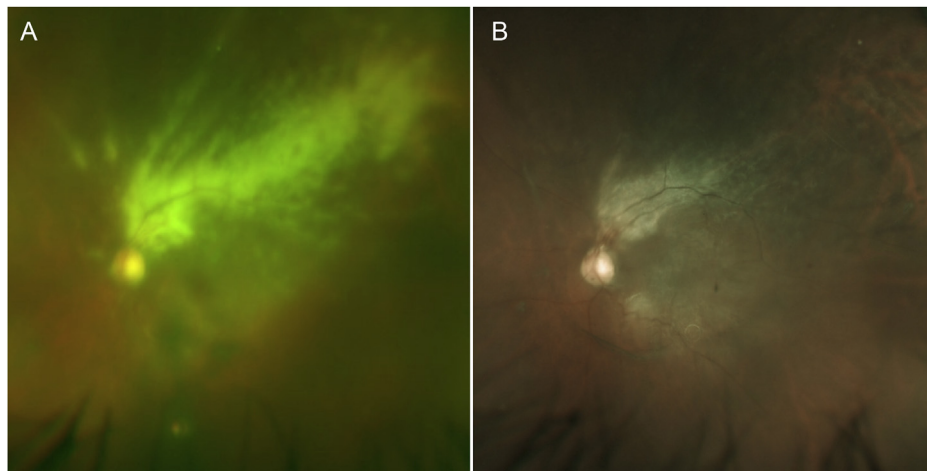
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**Figure 1.** Widefield fundus photographs taken at diagnosis of cytomegalovirus retinitis (A) and 4 months later after antiviral treatment and with clear media (B).

motions and retinal exam revealed fibrosis and depigmentation at the site of prior retinitis, significant macular thickening and macular epiretinal membrane (Fig. 1, B). The patient subsequently developed rhegmatogenous retinal detachment treated with vitrectomy and silicone oil tamponade. The vision is presently light perception and the retinitis remains inactive.

## 2. Discussion

This patient presented with pain due to corneal edema and was noted incidentally to have retinal infiltrate consistent with a viral retinitis. Results of PCR testing of intraocular fluid confirmed the presence of CMV infection. Treatment with intravitreal foscarnet followed by a long course of valganciclovir showed resolution of retinitis without evidence of ganciclovir resistance.<sup>2</sup> Visual symptoms typical for retinitis eg floaters and field loss were masked by his coincident corneal pathology and aphakia. To our knowledge this is the first case of CMV retinitis associated with topical prednisolone use alone.

CMV retinitis is almost exclusively identified in patients with a history immunosuppression; most frequently HIV with CD4 counts less than 50 per microliter.<sup>3</sup> Non-HIV associated bilateral CMV retinitis is rare with only 178 published cases identified in a meta-analysis.<sup>4</sup> Implicated systemic disorders include hematologic, oncologic and rheumatologic conditions with related or iatrogenic immunosuppression.<sup>4,5</sup> Notably such non-HIV patients with mild immunosuppression may demonstrate atypical ARN-like phenotypes.<sup>6</sup> Less commonly (6%), no immunosuppressed state is identified other than diabetes mellitus, hypertension, end stage renal disease or advanced age.<sup>4</sup> A small minority of cases (5%) had no known predisposition.<sup>4</sup> Local immunosuppression with periocular or intravitreal steroid has also been associated with non-HIV CMV retinitis with 21 reported cases<sup>7</sup> along with one case associated with topical difluprednate.<sup>8</sup> Glucocorticoid receptors are found in all ocular tissues including the retina and are known to play a role in blood-retina barrier function,<sup>9</sup> therefore increased concentrations at the retina in the setting of aphakia may be a predisposing factor.<sup>8</sup> Our patient had poorly controlled DM2 and had received routine intraoperative subconjunctival dexamethasone in addition to intracameral triamcinolone, followed by an extended course of topical prednisolone in the setting of aphakia. It is possible this combination of factors made the eye more susceptible to infection despite an immunocompetent state.

## 3. Conclusions

We suggest clinicians consider CMV in addition to other more commonly seen infectious agents when evaluating otherwise-healthy

patients with retinal whitening who have received intraocular or topical corticosteroids.

## Patient consent

Consent to publish this case report was not obtained. The report does not contain any personal information that could lead to the identification of the patient.

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## Disclosure statement

The authors have nothing to disclose.

## Authorship

All authors attest that they meet the current ICMJE criteria for Authorship.

## Declaration of competing interest

None.

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