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Case Report
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Cytomegalovirus Anterior Uveitis Masquerading as Ocular Tuberculosis: A Diagnostic Challenge in an Immigrant Patient with Latent Tuberculosis

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Abstract

Purpose: To describe a case of cytomegalovirus (CMV) anterior uveitis misdiagnosed as presumed ocular tuberculosis (TB) in an immunocompetent immigrant patient, leading to delayed diagnosis, corneal graft failure, and eventual vision loss.

Observations: A 74-year-old Filipino male with recurrent unilateral hypertensive anterior uveitis and a positive QuantiFERON-TB Gold test was treated for presumed ocular TB with RIPE therapy. Despite treatment, inflammation persisted, leading to corneal decompensation and a need for endothelial keratoplasty. The graft ultimately failed, and aqueous humor polymerase chain reaction (PCR) testing subsequently revealed CMV DNA. Antiviral therapy was initiated, and a subsequent penetrating keratoplasty was successful.

Conclusions and Importance: This case highlights the diagnostic pitfalls of anchoring bias in uveitis workups, particularly in TB-endemic or immigrant populations. CMV should be considered in unilateral hypertensive anterior uveitis, even in immunocompetent hosts. Aqueous PCR testing is critical in refractory cases to prevent irreversible vision loss.

Keywords: Uveitis; Cytomegalovirus; Tuberculosis; Diagnosis; Anterior; Masquerade

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Highlights

- Corneal graft rejection revealed a hidden cytomegalovirus infection.
- Cytomegalovirus can mimic rejection and mislead early diagnostic decisions.
- Early suspicion of tuberculosis shifted once viral DNA was detected.
- Eye inflammation first suggested tuberculosis before the viral cause emerged.

Introduction

Uveitis represents a diverse set of inflammatory eye disorders with a broad differential diagnosis. In patients from TB-endemic regions or those with positive interferon-gamma release assays, clinicians may prematurely attribute ocular inflammation to tuberculosis (TB) [1]. However, latent TB is common in specific populations and may not indicate causality in uveitic presentations. Cytomegalovirus (CMV), though classically associated with immunocompromised individuals, is increasingly recognized as a cause of anterior uveitis in immunocompetent, older adults [2]. The prevalence of CMV-associated uveitis exhibits marked geographic differences, attributable to factors such as economy, population density, health care status, lifestyle, and environmental exposure in various regions [3]. Most cases have been reported from Asia, especially China and Japan, which may reflect higher CMV seroprevalence in Asia [4]. CMV anterior uveitis can closely mimic other entities such as Posner-Schlossman syndrome or Fuchs uveitis, and is often underdiagnosed without confirmatory aqueous humor polymerase chain reaction (PCR) testing [5]. A previous study showed that 52.2% of eyes with presumed Posner-Schlossman syndrome and 41.7% of

eyes with symptoms similar to Fuchs uveitis syndrome were CMV-positive, as determined by PCR [6]. We report a case of CMV anterior uveitis misdiagnosed as ocular TB in a Filipino immigrant patient, highlighting the consequences of misdiagnosis and the importance of molecular diagnostics.

Case Presentation

A 74-year-old Filipino male with type 2 diabetes mellitus and a history of cataract surgery presented with recurrent pain, redness, and tearing in the right eye. Initial slit lamp exam showed anterior chamber inflammation consistent with iridocyclitis and IOPs up to 53 mmHg OD. He was treated with topical steroids and pressure-lowering agents with limited response.

Systemic workup revealed a positive QuantiFERON-TB Gold test and chest CT showing mild bronchiectasis. Despite no systemic TB symptoms or radiographic evidence of active infection, he was diagnosed with presumed ocular TB and initiated on RIPE therapy by infectious disease specialists. Uveitis persisted during treatment.

By 2022, the patient developed worsening corneal edema and bullous keratopathy. He underwent Descemet's Stripping Endothelial Keratoplasty (DSEK) in July 2023, which failed. He was referred to a uveitis specialist who performed an anterior chamber paracentesis. Aqueous humor PCR was positive for CMV DNA. He was started on oral valganciclovir, leading to a marked reduction in inflammation. He was started on oral valganciclovir, initially at an induction dose for 21 days, followed by a maintenance dose for approximately 6 months. He did not require intravenous therapy at any point. The patient tolerated oral treatment well, with no reported hematologic or gastrointestinal adverse effects, and demonstrated a marked reduction in anterior chamber inflammation.

A penetrating keratoplasty was performed in June 2025. Intraoperatively, the failed graft was adherent to the iris and created a dialysis on removal. The new graft remained attached, and the patient was maintained on continued oral valganciclovir, along with prednisolone acetate and intraocular pressure–lowering drops in the right eye.

Discussion

This case illustrates how CMV anterior uveitis can masquerade as ocular TB, particularly in older patients with latent TB. The initial diagnosis was confounded by the patient's positive QuantiFERON and TB-endemic origin. Despite receiving appropriate RIPE therapy, his ocular inflammation persisted, and his vision deteriorated.

CMV anterior uveitis is increasingly recognized in immunocompetent individuals [7] Hallmark features include unilateral inflammation, recurrent IOP spikes, iris atrophy, and eventual endothelial dysfunction [8]. In our case, these signs were present but misattributed to TB. Aqueous PCR was only performed after graft failure, revealing the true etiology of the condition [9]. Early molecular diagnostics could have prevented vision loss and unnecessary systemic treatment [10].

This case also underscores the importance of avoiding diagnostic anchoring. While TB is a significant cause of uveitis in endemic regions, it should remain a diagnosis of exclusion without ocular-specific findings [11]. The presence of CMV in aqueous humor reoriented treatment and stabilized the eye. The delay in proper diagnosis led to graft failure and irreversible damage.

Conclusion

In patients with recurrent unilateral hypertensive uveitis, CMV should be considered regardless of TB status or geographic origin. Aqueous humor PCR testing is essential in refractory or atypical cases [12]. Prompt diagnosis and targeted antiviral therapy can prevent severe complications such as graft failure, iris damage, and vision loss.

Patient Consent

Consent to publish this case report was obtained from the patient. This report does not contain any personal identifying information.

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Conflicts of Interest

The authors have no conflicts of interest to disclose.

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