

CASE REPORT

Bilateral Severe Cytomegalovirus Panuveitis in an Immunocompetent Individual

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ABSTRAK

Kami melaporkan kes panuveitis sitomegalovirus (CMV) kedua-dua mata dalam seorang wanita yang sihat. Seorang wanita Melayu berusia 62 tahun tanpa sebarang komorbiditi hadir dengan penglihatan kabur yang beransur-ansur dan semakin teruk pada mata kiri (OS), diikuti oleh mata kanan (OD) selama lima bulan. Ketajaman penglihatan beliau adalah pergerakan tangan OD dan tiada persepsi cahaya OS. Pemeriksaan mendapati terdapat mendakan keratik dan sel pada ruang anterior kedua-dua mata (OU) dengan rubeosis iridis OD dan seclusio pupillae OS. Funduskopi menunjukkan vitritis gred 3+ dengan kawasan retinitis konfluen yang berdarah di kutub posterior OD manakala visualisasi yang buruk OS disebabkan oleh vitritis padat gred 4+. Pemeriksaan ultrabunyi B-scan OS menunjukkan vitritis padat dan retina yang lekang. Sampel akueus OS diuji positif untuk CMV DNA melalui tindak balas rantai polimerase virus. Selepas dua minggu rawatan dengan gansiklovir intravena, penglihatan pesakit bertambah baik kepada 6/36 OD dan pengiraan jari OS. Kelewatan mendapatkan rawatan untuk jangkitan okular CMV dalam pesakit imunokompeten boleh menjadi teruk dengan vitritis yang padat dan komplikasi retina. Prognosis visual adalah kurang bagus disebabkan oleh nekrosis retina dan lekang urat saraf mata.

Kata kunci: Gansiklovir; imunokompeten; lekang urat saraf mata; panuveitis kedua-dua mata; sitomegalovirus

ABSTRACT

We reported a case of bilateral cytomegalovirus (CMV) panuveitis in an immunocompetent lady. A 62-year-old Malay lady with no comorbidities presented with gradual, progressive blurred vision in the left eye (OS) followed by the right eye (OD) for five months. Her vision was hand movement OD and no perception of light OS. There were keratic precipitates and anterior chamber cells in both eyes (OU) with rubeosis iridis OD and seclusio pupillae OS. Fundus showed vitritis 3+ with confluent areas of haemorrhagic retinitis at the posterior pole OD but poor view due to dense vitritis 4+ OS. B-scan ultrasound OS showed dense vitritis and retinal detachment. An aqueous sample from OS tested positive for CMV DNA via viral polymerase chain reaction. After two weeks of treatment with intravenous ganciclovir, vision partially improved to 6/36 OD and counting fingers OS. Delayed presentation of CMV ocular infection in an immunocompetent patient may be severe with intense vitritis and retinal complications. The visual prognosis is guarded due to retinal necrosis and detachment.

Keywords: Bilateral panuveitis; cytomegalovirus; ganciclovir; immunocompetent; retinal detachment

INTRODUCTION

Herpesviridae is a large family of DNA viruses which have three subfamilies, namely Alphaherpesviridae, Betaherpesviridae and Gammaherpesviridae. Common manifestation of ocular infection includes keratitis, anterior uveitis, scleritis and retinitis (Gugliesi et al. 2020).

Cytomegalovirus (CMV) belongs to the subfamily Betaherpesviridae. It can be transmitted by saliva, breast milk, sexual contact or organ transplantation (Gugliesi et al. 2020). Approximately 40 to 100% of the world population are CMV seropositive, and the prevalence increases with age (Schattner 2024). In particular, CMV retinitis causes full-thickness retinal infection leading to retinal necrosis and breaks (Liang et al. 2023). Bilateral cases were reported in approximately 40-65% of immunosuppressed patients (Alkhuraji et al. 2023). In contrast, CMV anterior uveitis is the commonest ocular presentation in immunocompetent patients, often presenting unilaterally and predominantly in men (Ye et al. 2023).

The incidence of bilateral ocular involvement in immunocompetent individuals is far less common compared to systemic infection (Schattner 2024). We aimed to describe a rare case of severe bilateral CMV panuveitis in a seronegative, immunocompetent woman without systemic CMV infection.

CASE REPORT

A 62-year-old Malay woman with no comorbidities presented with left eye (OS) blurred vision for five months, gradual in onset and progressively worsening. A week prior to the presentation, she experienced similar symptoms in the right eye (OD) associated with floaters. There was no photophobia, flashes of light or ocular pain.

On examination, her vision was hand movement OD and no perception of light OS. Both pupils were fixed and not reactive to light due to rubeosis iridis OD and seclusio pupillae OS. Anterior segment examination showed bilateral diffuse, mutton fat keratic precipitates

(KPs) and anterior chamber (AC) cells of 3+, (Figure 1 and 2). Both eyes (OU) had 3+ nuclear sclerosis, and OS had an added 2+ posterior subcapsular cataract. Intraocular pressure (IOP) was 10 mmHg OD and 08 mmHg OS.

Fundus examination revealed confluent areas of hemorrhagic retinitis at the posterior pole approximately two-disc diameter in size, with vitritis 3+ OD (Figure 3), which precluded optical coherence tomography (OCT) visualisation. There was no fundus view OS but B-scan ultrasound showed dense vitritis and retinal detachment (RD) (Figure 4).

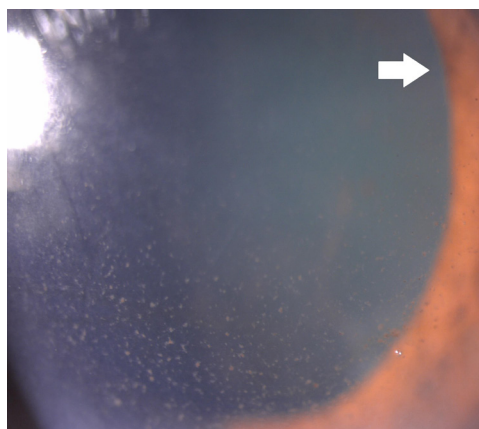


FIGURE 1: Anterior segment of the right eye with keratic precipitates and rubeosis iridis (white arrow).

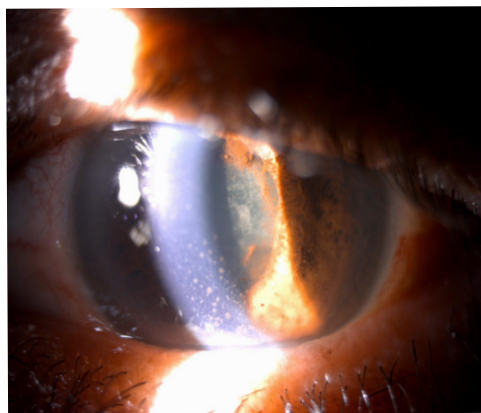


FIGURE 2: Anterior segment of the left eye with keratic precipitates, seclusio pupillae and dense cataracts

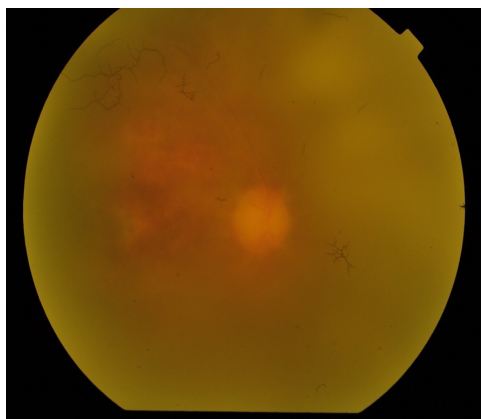


FIGURE 3: Fundus photograph of the right eye showing hemorrhagic retinitis and dense vitritis

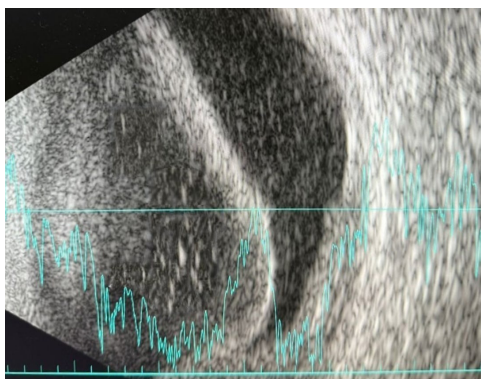


FIGURE 4: B-scan of the left eye showing dense vitritis and retinal detachment

Her blood investigations were unremarkable and viral screening for Hepatitis B, C and human immunodeficiency virus were non-reactive, and additionally CMV IgM and IgG were also negative. Given the granulomatous nature, tuberculosis (TB) and syphilis were excluded; Mantoux test showed 0mm induration, chest X-ray was unremarkable, and the Venereal Disease Research Laboratory test was non-reactive. An aqueous sample for viral polymerase chain reaction from the left eye detected CMV DNA. Both herpes simplex virus (HSV) and varicella-zoster virus (VZV) were negative. No quantitative polymerase chain reaction (PCR) was performed.

Intravenous ganciclovir at a dose of 5 mg/kg twice daily was administered for two weeks to treat bilateral CMV panuveitis with severe posterior involvement. Intravitreal ganciclovir was offered for OD but declined, and contraindicated in OS due to RD. She showed marked improvement with reduced AC cells and KPs OU alongside a reduced area of retinitis and vitritis OD. Oral valganciclovir was not initiated due to financial constraints. Two weeks post-treatment, vision improved to 6/36 OD and counting finger OS. Vision remained poor OS due to dense cataract and RD. Given the guarded prognosis OS, the patient was not keen on any surgical intervention. A cataract extraction surgery has been planned for her right eye.

DISCUSSION

Ocular CMV has been associated with anterior uveitis, elevated IOP, corneal endotheliitis, papillitis and potentially blinding chorioretinitis (Musa et al. 2025). It is typically seen in immunocompromised patients, such as those with acquired immunodeficiency syndrome with CD4 cell count less than 50/ μ L, organ transplant patients on long-term immunosuppression or neonates (Kobayashi & Hashida 2024).

Bilateral severe necrotising CMV retinitis with RD has been reported in patients treated with high-dose systemic steroids (Radwan et al. 2013). Recent studies have emphasised the importance of comprehensive immune workups in elderly patients presenting with CMV ocular disease, as occult hematological malignancies or localised immune dysregulation may be underrecognised contributors (Passarin et al. 2024). Our patient had none of these features to explain her risk for severe bilateral panuveitis; she was systemically well with no malignancies, hematologic disorders or TB, supporting the diagnosis in an immunocompetent host.

The commonest ocular manifestation of CMV disease in immunocompetent patients is CMV anterior uveitis, presenting as unilateral reduced vision associated with eye pain, redness and raised IOP (Alkhuraiji et al. 2023).

CMV lies in the myeloid progenitor cells and is reactivated in AC monocytes when the immune system is compromised (Alkhuraiji et al. 2023). Due to heightened immune response in immunocompetent patients, a higher rate of CMV anterior uveitis is observed compared to immunocompromised individuals (Ye et al. 2023).

In immunocompetent patients, two types of unilateral self-limiting CMV retinopathy have been described; predominant cotton wool spots, and chorioretinitis with venous sheathing (Radwan et al. 2013). However, bilateral severe CMV retinitis in the immunocompetent individual is rarely reported. Our patient did not just have bilateral disease, but severe panuveitis with significant visual loss and only partial recovery with treatment. Despite being seronegative, significant intraocular damage has occurred in this middle-aged lady. However, ocular manifestations of a viral infection in an immunocompetent patient may not be specific to a particular pattern and response may vary due to the host's genetic makeup and the immune status of that eye (Babu et al. 2020). Emerging data from 2024 suggest that CMV retinitis may present with a wider phenotypic spectrum in non-HIV patients, including chronic necrotising lesions and resistance to antivirals like ganciclovir (Xia et al. 2024). Such variability may reflect intraocular immune responses or genetic factors affecting viral replication control (Passarin et al. 2024).

Ocular CMV infection can be confirmed by PCR amplification of the viral DNA in the aqueous or vitreous specimens (Bansal et al. 2020). Testing early at the initial presentation is significantly associated with a positive PCR result (Musa et al. 2025). Our patient had a positive result despite having the test done months after the initial presentation, suggesting a unique immune makeup of the eye.

The goal of anti-CMV therapy is to preserve vision and reduce the risk of CMV-related visual complications (Musa et al. 2025). CMV retinitis can be treated with intravitreal ganciclovir injection as it delivers a high intraocular concentration with minimal systemic toxicity, while rapidly

controlling the retinal lesions (Alkhuraiji et al. 2023). Our patient was given systemic ganciclovir as she has bilateral involvement and intravitreal injection was contraindicated due to the presence of RD. Treatment with intravenous ganciclovir, foscarnet, cidofovir or oral valganciclovir is associated with reduced mortality, fewer cases of visceral disease, and a lower risk of second-eye disease compared to intraocular therapy (Alkhuraiji et al. 2023). Newer evidence shows that oral valganciclovir is highly effective for CMV anterior uveitis and mild retinitis in non-HIV patients, allowing outpatient treatment when accessible (Dheyab et al. 2025).

Complications from CMV uveitis like glaucoma, RD and immune recovery uveitis, may also result in vision loss (Musa et al. 2025). Our patient presented with bilateral panuveitis and left eye RD. Rhegmatogenous retinal detachment can occur in up to 24% of CMV retinitis patients (Alkhuraiji et al. 2023). The likelihood of retinal hole formation rises with the extent of necrosis and the presence of active retinitis at the vitreous base (Musa et al. 2025). In cases with necrotising retinitis, a barricade laser can be administered at the junction of the normal retina to halt progression of the necrosis and prevent rhegmatogenous RD (Liang et al. 2023). Alternatively, rhegmatogenous RD may also be treated with scleral buckle or vitrectomy with silicone oil (Musa et al. 2025). Once RD occurs, the vision may remain poor despite successful surgical reattachment (Liang et al. 2023), and hence our patient opted against surgery.

CONCLUSION

As a conclusion, delayed presentation of CMV ocular infection in an immunocompetent patient may be severe with intense vitritis and retinal complications. Aqueous PCR may aid the diagnosis and prompt treatment can be commenced. Despite the guarded visual prognosis due to retinal necrosis and detachment, partial visual restoration can be achieved with antiviral therapy.

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Conflict of interest: The authors declare no conflicts of interests.

Ethics statement: Informed consent was obtained from patient. Patient anonymity has been strictly preserved. All identifying information has been removed from the manuscript and images.

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