Cytomegalovirus Retinitis in Immunocompetent Young Male

Eijaz Ghani, Misbah Noor and Saadiya Khalid

ABSTRACT

Cytomegalovirus (CMV) retinitis is a sight-threatening form of posterior uveitis affecting patients with Acquired Immunodeficiency Syndrome (AIDS), especially those with CD4 count <50 cells/mm$^3$. There are few reported cases of CMV retinitis in patients with CD4 count >100 cells/mm$^3$. A virostatic agent like Ganciclovir has good response rate when given as intravitreal injection. Here, we report a case of CMV retinitis in a young immunocompetent male who presented with history of progressive loss of vision in both eyes despite receiving oral and intra-vitreal steroids. At the time of diagnostic testing, there was no history of high dose immunosuppressant therapy. CMV infection was confirmed by Polymerase Chain Reaction (PCR) for viral deoxyribonucleic acid (DNA) testing. Physicians treating such cases should take into account infectious causes of retinal vasculitis before starting anti-inflammatory therapy. Proper diagnosis should precede the treatment as far as possible.

Key Words: Cytomegalovirus. Immunocompetency. Retinitis.

INTRODUCTION

Cytomegalovirus (CMV), a ubiquitous human virus, has estimated seroprevalence of 40%-100% in young adults by the fourth decade of life. Viral transmission can occur through placenta, breast feeding, saliva, sexual contact, blood transfusion and organ transplant. CMV becomes dormant in healthy individuals, leading to lifelong persistence. Among Human Immunodeficiency Virus (HIV) patients, it is the most common opportunistic viral infection, especially those with CD4 count < 50/mm$^3$. We herein, report a case of CMV retinitis in a young immunocompetent male.

CASE REPORT

A young male of 29 years presented with history of progressive loss of vision in both eyes since December 2013. Patient was undergoing higher studies in Saudi Arabia when he developed blurring of vision in his right eye. Initially, he ignored it as it was mild and not disturbing his routine activities. But few weeks later, he developed similar blurring of vision in left eye. Alarmed by this, the patient returned to Pakistan. He consulted an ophthalmologist, who gave him near vision glasses, which were of no use as loss of vision kept on progressing. He consulted many ophthalmologists, one of them diagnosed that he has bilateral cataract. He got himself operated for cataract in May 2014 with bilateral intra-ocular lens implantation. The deterioration of vision halted for a month or so, but then it began to reduce at a faster rate. The patient reported to another ophthalmologist who suspected chorioretinitis/idiopathic vasculitis and started intra-vitreal steroids. He received steroids for more than a year, but there was no improvement. By August 2015, he had completely lost vision in his right eye.

At the time of reporting to virologist, he was completely blind in right eye with left eye vision reduced to 6/24. His viral studies were carried out and very high counts of CMV were detected with polymerase chain reaction (PCR). This was unusual in a young patient having no history of immunosuppression. Other laboratory investigations like blood complete picture, renal function tests, liver function tests were normal. Erythrocyte Sedimentation Rate (ESR) and C-Reactive Protein (CRP) were raised. Mantoux test, Venereal Disease Research Laboratory (VDRL) test, Herpes Simplex Virus IgM, Varicella Zoster IgM, HIV 1 and 2, Hepatitis B surface antigen (HBsAg), Hepatitis C Virus antibodies, Toxoplasma IgM and IgG were not present. All the markers of autoimmune disease including Anti-Neutrophil Cytoplasmic Antibody (ANCA) IgG, p-ANCA IgG, anti-double stranded DNA antibodies (anti-ds-DNA) and Anti-Nuclear Antibodies (ANAS) were also negative. His CMV DNA by PCR showed 883,333 copies/ml. To exclude immunodeficiency, immunoglobulin levels and lymphocyte subset analysis were done, which were found to be normal. Patient was started on intravenous Ganciclovir, 5mg/kg twice daily for two weeks, followed by maintenance dose of Ganciclovir, 5mg/kg once daily along with tab Allopurinol twice daily and oral Fexofenadine once daily. Patient showed a marked improvement in his eyesight with reduction in viral counts. The eyesight of patient improved from 6/24 to 6/9.

The CMV DNA titers decreased for first four months, then began to increase again (Table I) which meant that...
patient has developed resistant strains of CMV. He was again shifted on induction dose of Ganciclovir as second line drugs are not available in Pakistan. Patient is still receiving induction dose of Ganciclovir.

**DISCUSSION**

In HIV infection, CMV progression is promoted by retinal vascular endothelial damage and reduced blood flow velocities.\(^1\) Administration of intravitreal steroids also lowers overall lymphocyte count, i.e CD4 and CD8 cells.\(^1,3\) It is quite likely to encounter CMV retinitis in immunocompetent patients; as Gupta et al.\(^4\) has reported 7 cases of CMV retinitis in immunocompetent patients. Radwaan et al.\(^1\) has reported 2 cases of CMV, who were immunocompetent. In all these cases reported by Gupta et al. and Radwaan et al., patients developed CMV retinitis following intravitreal steroids, i.e local immunosuppression.\(^1,4\)

Tugal-tutkun et al. reported a case of a 30-year male with Behcet's uveitis who developed CMV retinitis following intravitreal triamcinolone acetonide injection. The patient was HIV negative with CD4 count of 1,060 cells/µl.\(^5\)

Intravenous Ganciclovir, Foscarnet and Cidofovir are effective but systemic side effects limit their use. Intravitreal Ganciclovir or Cidofovir is good alternative as it has limited systemic side effects.\(^3\) Maintenance therapy for life in AIDS patients can slow the progression of retinitis and minimize visual loss. Daily intravenous therapy is not convenient and is associated with catheter related complications.\(^6\) Ganciclovir and Valganciclovir therapy is associated with neutropenia whereas Foscarnet and Cidofovir administration can result in nephrotoxicity.\(^7\)

This report aims at raising awareness that old age, presence of immunosuppression and comorbid like diabetes mellitus and hypertension are not necessary for development of CMV disease. As in our case, patient developed bilateral CMV retinitis despite being young and immunocompetent. However, further studies are required to establish the fact.

**REFERENCES**


---

**Table I: CMV DNA PCR (quantitative).**

<table>
<thead>
<tr>
<th>Date</th>
<th>CMV concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>07-03-16</td>
<td>883333 copies/ml</td>
</tr>
<tr>
<td>18-03-16</td>
<td>83083 copies/ml</td>
</tr>
<tr>
<td>31-03-16</td>
<td>10000 copies/ml</td>
</tr>
<tr>
<td>11-04-16</td>
<td>9750 copies/ml</td>
</tr>
<tr>
<td>05-05-16</td>
<td>8250 copies/ml</td>
</tr>
<tr>
<td>22-06-16</td>
<td>6250 copies/ml</td>
</tr>
<tr>
<td>11-07-16</td>
<td>13167 copies/ml</td>
</tr>
<tr>
<td>09-08-16</td>
<td>41833 copies/ml</td>
</tr>
<tr>
<td>27-09-16</td>
<td>24557 copies/ml</td>
</tr>
</tbody>
</table>

---

**Figure 1:** Fundoscopy of right eye showing long standing retinal detachment with atrophic ischemic changes.

**Figure 2:** Fundus examination of left eye showing healed multifocal patches of chorioretinitis sparing macula.

---

---