CASE REPORT

Cytomegalovirus Retinitis in an Immunocompetent Pregnant Woman

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ABSTRACT

Cytomegalovirus (CMV) is a herpes virus that causes a wide spectrum of diseases. One of the most important clinical manifestations of CMV is retinitis which occurs often in immunocompromised patients and is a serious and sight-threatening condition. The diagnosis is made clinically based on ophthalmologic examination but in equivocal situations can be confirmed by aqueous or vitreous polymerase chain reaction (PCR) testing. Here, we report one case of CMV retinitis in a pregnant woman without any obvious immunodeficiency that started with mononucleosis like syndrome at first and followed by retinal involvement. The disease was diagnosed by ophthalmologists and confirmed by aqueous PCR. The patient was treated with ganciclovir. Our opinion is that pregnancy and its mild cellular immunity can probably be considered as a cause of CMV retinitis in this patient.

Keywords: *Cytomegalovirus,* immunocompetency, pregnancy, retinitis

INTRODUCTION

Cytomegalovirus (CMV) is a beta-herpes virus. It belongs to herpes virus family that causes a wide spectrum of diseases in all age groups.[1] CMV causes a wide variety of clinical manifestations from mononucleosis like syndrome to life-threatening diseases in immunosuppressed states. It is the most common virus that results in opportunistic infections in immunocompromised patients, especially those infected with human immunodeficiency virus (HIV).[1] CMV retinitis is associated with some characteristic appearance in the retina; white fluffy retinal infiltrates appearance is the characteristic pattern. Furthermore, white granular area with no hemorrhage, retinal vasculitis with frosted branch angiitis pattern and multiple retinal hemorrhages can appear.[1] When the pattern is atypical, other differential diagnosis such as candidiasis and toxoplasmosis should be considered.[2]

CMV retinitis is associated with several immunodeficiency states such as transplantation, acquired immunodeficiency syndrome (AIDS), and autoimmune diseases. CMV retinitis occurs rarely in an immunocompetent person. There are studies that show this disease is frequently associated with a low cluster of differentiation 4 (CD4), below 50 cells/mm^3, in AIDS patients.[1]

Here, we present a case of CMV retinitis in an immunocompetent pregnant woman that had no previous predisposing factor for acquiring CMV retinitis.

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CASE REPORT

A 28-year-old pregnant woman, with a gestational age of 5 weeks and gravid 2 para 1 parity1 (G2P1), was visited by a general physician, because of fever. The fever appeared in an acute onset with a sore throat but no coryza and cough. She had also myalgia and malaise. She was given cephalexin but symptoms continued.

Two days after fever onset, skin rashes supervened. Therefore, she was referred to hospital for admission and more evaluation. She had no history of hospitalization except for delivery.

At the first visit, her temperature was 39.2° centigrade. She was ill complaining of myalgia with a sore throat. There were no exudates on tonsils but several vesiculopastular rashes on her face and neck with multiple large tender and erythematous subcutaneous nodules on the anterior part of both legs that was clinically consistent with erythema nodosum (EN). Furthermore, she had some aphthous lesions on the buccal mucosa. Because of fever, rash and being pregnant, she was systematically examined and a wide variety of evaluations performed.

Although the skin rashes were more suggestive of herpetic lesions, one of the vesiculopustular lesions on her face was aspirated, which showed gram-positive cocci on gram stain smear.

Intravenous (IV) cloxacillin 500 mg every 6 h was started. Chest X-ray was not performed because of having no respiratory symptoms while being pregnant. Abdomen pelvic ultrasonography was normal. Biopsy of one of a tender nodule on her leg revealed EN.

Two days later, fever and skin rashes subsided, but the patient developed blurred vision, epiphora, and redness in both eyes which were associated with mild generalized headache. She had no neck stiffness and Brudzinski's, and Kernig's sign were negative. There was papilledema on fundoscopy. Brain, magnetic resonance imaging, was reported as normal. The patient was assessed by retinal specialists. They reported yellow cloudy retinal lesions which centered around vasculature and seems to be confluent areas of retinal necrosis [Figure 1]. Anterior chamber paracentesis was done, and aqueous sample sent for multiplex polymerase chain reaction (multiplex-PCR) that tested all herpes viruses. PCR was done by a fluorescent amplification-based specific hybridization method using specific fluorescent-labeled probes with the sensitivity of 500 copies of DNA per milliliter. IV ganciclovir 5 mg/kg twice a day was started because CMV retinitis could not be immediately ruled out.

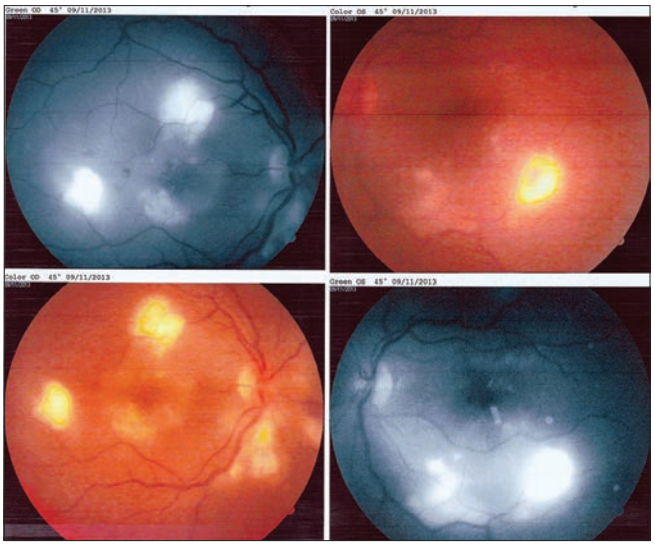

Figure 1: Retinoscopy before treatment, there are some retinal lesions with hemorrhage. OD: Right eye, OS: Left eye

Finally, the result of multiplex-PCR turned positive for CMV DNA. Interestingly blood CMV PCR viral load was negative.

Based on these reports, reduction of fever and knowing the skin rashes, IV cloxacillin was discontinued, and the patient was maintained on and IV ganciclovir 5 mg/kg twice daily. To find predisposing factors, we screened the patient's blood for HIV Type 1 and 2 antibodies by third generation enzyme-linked immunosorbent assay 3 times in three different laboratories with negative results. The patient was also screened for CD markers to detect an underlying immunodeficiency state but was found to be negative. A complete rheumatologic profile was within normal ranges. Laboratory data including serologic markers of herpes viruses and other tests are shown in Table 1.

Retinal lesions improved after 1 week of parenteral ganciclovir therapy, and 2 weeks later blurred vision improved [Figure 2]. The patient was discharged on oral valganciclovir 900 mg every 12 h and followed by an ophthalmologist. Therapeutic abortion was done as requested by the patient and her husband on account of patient's anxiety about the negative effects of the disease and ganciclovir on the fetus.

DISCUSSION

CMV is a virus that can cause asymptomatic and harmless disease and sometimes results in mononucleosis like syndrome. This herpes virus also can cause severe diseases in patients with immunodeficiency and involve many organs such as liver, lung, eye, and central nervous system. CMV retinitis is a common form of disease in immunodeficiency states such as AIDS, transplantation,

Table 1: Lab data

WBC: 11200	EBV VCA - Ab IgM: 0.5 (negative)	Total serum IgG: 6.33 (NL)	CD25 + CD4: 6%	CD16 + CD56: 14%
Neutrophil: 87% LYM: 8.9%	EBV VCA - Ab IgG: 133 (positive)	Total serum IgM: 1.22 (NL)	CD3: 74%	HLA-DR: 12%
Hb: 10.5	CMV IgM: 0.83 (positive)	Total serum IgA: 1.15 (NL)	CD4: 47%	CD3/CD16 + CD56: 2%
PLT: 113000	CMV IgG: 153 (positive)	ESR:97	CD8: 25%	CD19: 11%
ALT: 37	VZV IgM: 2.6 (negative)	CRP:69	CD20: 12%	PT: 14(NI)
AST: 43	VZV IgG: 23.8 (positive)	HIV 1 ,2 Ab:neg	CD25: 4%	INR: 1.48

WBC: White blood cell, lym: Lymphocyte, Hb: Hemoglobin, PLT: Platelet, ALT: Alanine aminotranferase, AST: Aspartate aminotransferase, EBV VCA Ab: Ebstein Barr Virus Viral Capsid Antigen Antibody, IgM: Immunoglobulin M, IgG: Immunoglobulin G, CMV: Cytomegalovirus, VZV: Varicella Zoster Virus, ESR: Erythrocyte Sedimentation Rate, CRP: C Reactive Protein, HIV: Human Immunodeficiency Virus, CD: Cluster of differentiation, HLA: Human Leukocyte Antigen, PT: Prothrombin Time, INR: International Normalized Ratio, NL: Normal

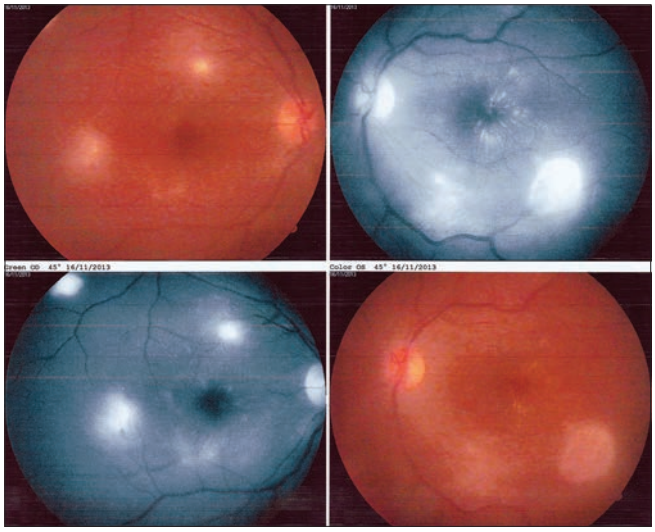

Figure 2: Retinoscopy 1 week after ganciclovir treatment. The size and extension of the lesions dramatically responded to parentral therapy. OD: Right eye, OS: Left eye

malignancy and also in patients with limited immune system dysfunction such as diabetes mellitus and elderly patients.[1]

This retinitis causes a progressive retinal destruction, which occurs often in patients with CD4 T-lymphocyte cell count lower than 50 cells/mm^3 and the involvement is bilateral.[1]

CMV causes severe diseases in patients with cellular immunodeficiency,[1] such as pregnancy.[3] The fetus can be tolerated by suppression of cellular immunity; these changes make a condition of susceptibility to some intracellular microorganisms too.[4]

The diagnosis of CMV retinitis is often made on clinical grounds alone in the setting of immunodeficiency states. It is characterized by white fluffy retinal infiltrates located peripherally and multiple areas of perivascular hemorrhage.[1]

In a study by Colby *et al*. in 2013 in Vietnam the prevalence of CMV retinitis in HIV patients (201 cases) was 7%.[5] Another study carried out in 2012 by Jeon *et al*. on 708 HSCT (hematopoietic stem cell transplantation) patients, among 270 patients with CMV viremia which underwent ophthalmologic examination, 15 of them had concurrent CMV retinitis.[6]

In this case report, a patient with CMV retinitis was described. Our patient was pregnant and had no immunodeficiency state except her pregnancy. According to the retinal lesions previously described, the diagnosis of CMV retinitis presumed and with anterior chamber paracentesis that was evaluated for multiplex-PCR the diagnosis of CMV retinitis was confirmed. In this patient, IV, antiviral therapy resulted in significant clinical improvement and the necrotic lesions gradually become limited and improved, and also did not progresses. All of the tests for evaluating immunodeficiency were normal.

CONCLUSION

We describe a case with CMV retinitis with an unusual presentation in a pregnant woman. Our opinion is that pregnancy and its mild cellular immunosuppression state may be consider as part of the reason for developing CMV retinitis.

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Conflicts of interest

There are no conflicts of interest.

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