Cytomegalovirus Retinitis in a 4-Year-Old Child with Acute Lymphoblastic Leukemia: Treatment and Prognosis

ABSTRACT

Purpose: Children with acute lymphoblastic leukemia (ALL) are complicated with cytomegalovirus (CMV) retinitis due to the compromised immune function after chemotherapy. Here, we report a case of cytomegalovirus retinitis in a 4-year-old girl with ALL to emphasize the importance of early diagnosis and intravenous administration of antiviral medication in this group of patients.

Case Report: A 4-year-old girl with ALL was diagnosed of fulminant CMV retinitis after chemotherapy. Funduscopic examination revealed perivascular sheathing in pole and peripheral retina of right eye. Large areas of yellowish-white edema, hemorrhage and exudation along the vessels were seen in the superior nasal retina. Few perivascular sheathings were found in peripheral retina without obvious hemorrhage and exudation in left eye. With early diagnosis and prompt intravenous administration of ganciclovir, the lesion of the fundus subsided and the vision was restored over 4 months of follow up period.

Conclusions: In summary, CMV retinitis can occur in ALL pediatric patients who receive chemotherapy only, especially in the maintenance stage. With routine follow-up, early diagnosis and intravenous antiviral therapy, these patients may have a good prognosis.

Keywords: Cytomegalovirus Retinitis; Acute Lymphoblastic Leukemia; Early Diagnosis; Intravenous Antiviral Therapy

INTRODUCTION

Cytomegalovirus (CMV), a ubiquitous herpesvirus, can cause severe disease with high morbidity and mortality in immunocompromised patients [1]. CMV retinitis is a serious viral eye infection of the retina, commonly in the form of necrotizing retinitis, which can potentially lead to blindness. CMV infection is commonly present in patients with advanced acquired immunodeficiency syndrome (AIDS), patients with immunodeficiency due to other etiologies are highly vulnerable to CMV infection.[2] CM retinitis has been described in ALL patients who received chemotherapy. However, only two cases of CMV retinitis have been reported in ALL children on chemotherapy [3, 4]. Herein, we reported a fulminant CMV retinitis in a 4-year-old girl with ALL on chemotherapy, with an emphasis on early diagnosis and prompt intravenous administration of antiviral medication.
CASE REPORT

A 4-year-old girl, who presented with pale complexion and joint pain in 05/2015, was diagnosed as intermediate risk acute lymphoblastic leukemia in the Department of Hematology, Hebei Children's Hospital. Subsequently, she received systemic chemotherapy, CCLG2008. After a week of the upper respiratory tract infection combined with later-onset pneumonia, she was referred to our department for diminution of vision. At initial examination, her best corrected visual acuity was 20/100 in the right eye (OD) and 20/40 in the left eye (OS). Slit-lamp biomicroscopic examination of the anterior chamber of the eyes was within normal limits. However, dust-like opacities in vitreous was discovered, especially in the right eye. Funduscopic examination revealed perivascular sheathing in pole and peripheral retina of right eye. Large areas of yellowish-white edema, hemorrhage and exudation along the vessels were observed in the superior nasal retina (Figure 1. A-D).

After a week, her best corrected visual acuity was 20/100 in the right eye (OD) and 20/25 in the left eye (OS). Funduscopic examination revealed perivascular sheathing in right eye was reduced. Diffuse punctuate exudation was seen in pole retina. Hemorrhage and exudation were disappeared. A small number of granular lesions were seen in the peripheral retina (Figure 2. A-D). Perivascular sheathings in peripheral retina of left eye were lighter (Figure 2. E-H). Her CD4 T-cell count was 64/µl. Her fundus lesions diminished significantly and CD4 T-cell count increased.

Therefore, the current systemic treatment continued. The patient was followed up every week for eye examination. Blood CD4 T-cell count, complete blood count, liver and kidney function were monitored. CD4 T-cell count increased. Her vision and fundus condition continuously improved. Therefore, we reduced ganciclovir dosage to 5mg/kg intravenous drip 1/d in the fourth week. After six weeks, her best corrected visual acuity was 20/50 in the right eye (OD) and 20/25 in the left eye (OS). Funduscopic examination revealed perivascular sheathing in right eye was degraded. Fewer exudations was seen in pole retina. Hemorrhage and exudation were absent. Scarring of retinal focus and a small number of granular lesions was present (Figure 3. A-D). Perivascular sheathings in peripheral retina of left eye disappeared (Figure 3. E-H). Her CD4 T-cell count was 147/µl. Follow up at 4 months, her best corrected visual acuity was 20/20 in both eyes. Funduscopic examination revealed no perivascular sheathing in both eyes. Retinal focus of right eye showed healing scar. The blood vessels were white (Figure 4. A-H). The CD4 T-cell count was 254/µl. Systemic antiviral medication discontinued. There was no evidence of recurrence in 6 months of follow-up.
CMV infects the eye hematogenously and causes retinal diseases. Variable degrees of retinal edema lead to pale areas of the retina. Histologically, CMV retinitis exhibits areas of full-thickness retinal necrosis and edema or exudation. Clinically, CMV retinitis can be divided into two different types [5], fulminant or edematous retinitis and slow or nodular retinitis. Histologically, fulminant or edematous retinitis shows wedge-shaped areas of whitening with associated dense hemorrhage and edema. Retinal vasculitis with perivascular sheathing is a common manifestation in children with CD4 T-cell count is low, especially less than 100/μl, and CMV-DNA is detected.

In summary, CMV retinitis is not uncommon in acute lymphoblastic leukemia pediatric patients who receive chemotherapy only, especially in the maintenance stage. With routine follow-up, early diagnosis and intravenous antiviral therapy, these patients have a good prognosis.

REFERENCES


