A Case Report of Leukemic Retinopathy

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Abstract

Introduction: Leukemias are a group of neoplasms arising due to malignant transformation of blood forming cells. Ocular involvement in leukemia is most common.

Case Report: A 11 year old female child presented with defective vision in both eyes more in left eye compared to right eye. Subconjunctival haemorrhage present in both eyes. Pre-retinal haemorrhages, hard exudates, cotton wool spots in right eye and vitreous haemorrhage in left eye. Based on clinical findings she was advised systemic evaluation.

Discussion: Ocular findings in leukemia mostly due to hyperviscosity status and medications used in treatment.

Conclusion: Ocular involvement has been described in up to 50% of patients at the time of diagnosis. So diagnosis of leukemia based on ocular findings is life saving as survival rate is increasing with chemotherapy.

Key words: Leukemia, Acute promyelocytic leukemia.

I. Introduction

Leukemias are a group of neoplasms occurring due to malignant transformation of blood forming cells. It may be acute or chronic, four basic types are present. Acute myeloblastic leukemia (AML), Acute lymphoblastic leukemia (ALL), Chronic myeloid leukemia (CML), Chronic lymphatic leukemia (CLL). Acute leukemias are more common in children and usually affect boys more often than girls¹. Almost all patients with leukemia develop eye findings at some stage of malignancy, less than 5% of patients with leukemia present first to the ophthalmologist for an ocular manifestation which then leads to a diagnosis of leukemia². Ocular features may be proliferative or non-proliferative retinopathy.

II. Case Report

A 11 years old female child presented with defective vision in both eyes left eye more compared to right eye since 20 days. Visual acuity in right eye unaided was counting fingers at 1 meter with pin hole no improvement and in left eye unaided was hand movements with pinhole no improvement. Anterior segment findings are subconjunctival haemorrhage in both eyes.

Fig-1 Subconjunctival haemorrhage in right eye
Posterior segment findings are

Right eye – Media is clear, Optic disc – temporal pallor, blood vessels are normal, Macula - haemorrhages,cotton wool spots,hard exudates present, multiple preretinal haemorrhages present in inferior quadrant of background retina. Left eye – Media is hazy due to vitreous haemorrhage.

A.  

B.  

Fig -2 : A and B .Macula - haemorrhages,cotton wool spots,hard exudates present ,multiple preretinal haemorrhages present in inferior quadrant of background retina .

Fig -3 : Right eye – macular haemorrhage  

Fig -4 : Left eye – vitreous haemorrhage

Differential diagnosis are diabetic retinopathy , hypertensive retinopathy , anaemic retinopathy , Leukemic retinopathy. Based on clinical findings she was advised systemic evaluation.

Investigations

B – Scan

Right eye – No vitreous haemorrhage , no retinal detachement
Left eye – vitreous haemorrhage present , no retinal detachement
Blood pressure – 100/70 mmHG , Random blood sugar values – 98mg/dl
Complete blood picture :Hb - 8.4gm/dl ; Total leucocyte count : 24,100 ; Platelets : 55,000

Peripheral smear:

RBC hypochromasia with anisocytosis comprising of normocytes, microcytes and occasional macrocytes
WBC- Leukocytosis with left shift comprising of myeloblasts and promyelocytes accounting to 60%. There are Auer rods seen in some of the blasts. Platelets: thrombocytopenia, no haemoparasites.
Opinion: Acute Promyelocytic Leukemia (AML-M3)
Based on investigations we came to an assumption of Leukemic retinopathy. Patient was referred to Oncologist and Paediatrician for further management. Where they confirmed as Acute Promyelocytic Leukemia. Patient was immediately put on blood transfusions and Oral All-transretinoic acid 50 mg/day daily at 45 mg/m2/day BD, IV Idarubicin 15 mg x 3 days at 12 mg/m2 every alternate day.
After six months of chemotherapy, both eyes anterior segment was normal. Right eye vision was 6/36 temporal pallor of optic disc, preretinal haemorrhages resolved leaving an sub foveal retinal pigment detachment and in left eye vision was 6/60 pale disc, sub foveal retinal pigment detachment due to resolved vitreous haemorrhage.
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III. Discussion

Acute Promyelocytic leukemia is a distinct subtype of AML, designated M3 by FAB. Accounts for 10 - 15 % of cases of AML. Characteristic molecular genetic abnormality - PML RARA t(15;17).

Ocular findings in acute leukemia are due to leukemia induced hyperviscosity status, immunosuppressive state, medications used in the treatment of leukemia, radiation effects used in the treatment of leukemia, effects of post bone marrow transplantation. Chronic leukemia develops proliferative retinopathy due to longstanding retinal nonperfusion, which leads to retinal haemorrhage and neovascularisation. The anterior segment findings like subconjunctival haemorrhage, cataract, orbital involvement is less commonly involved than the posterior segment. The posterior segment findings in the form of retinal and preretinal hemorrhages, Roth spots, hard exudates, and cotton wool spots, vitreous haemorrhage usually develop in almost all patients with leukemia. They are usually observed in diagnosed case of leukemia. Prognosis in leukemic retinopathy depends on the phase of the disease that is whether it is nonproliferative or proliferative and presence of ischemia, hemorrhages, infiltrates in macula area. Macular exudates resolves with chemotherapy in leukemic retinopathy, retinal pigment epithelial layer atrophy usually develops and decreases the visual recovery. Once proliferative stage develops, laser photocoagulation of the ischemic areas becomes necessary. Vitrectomy is needed if traction sets in, which is threatening or involving the macula or if vitreous hemorrhage occurs. In these case because of patients general condition was unstable. We advised good systemic control.

IV. Conclusion

Ocular involvement is common in patients with leukemia and has been described in up to 50% of patients at the time of diagnosis. So diagnosis of leukemia based on ocular findings is life saving as survival rate is increasing with chemotherapy.

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References