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Case report

A case of Acute Myeloid Leukemia masquerading as unilateral exudative detachment

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ABSTRACT

Purpose: Leukemias can involve almost every part of the human eye. Ophthalmic manifestations of leukemias can be divided into direct infiltration, secondary vascular changes and neuro-ophthalmological changes. Our case presented with exudative retinal detachment mimicking Vogt Koyanagi Harada's disease (VKH).

Observations: A 30-years old Asian (Indian) female presented with insidious onset of painless diminution of vision from her right eye for one month. She gave history of fever and severe headache at the time of onset of ocular symptoms. Fundus examination revealed exudative retinal detachment at the posterior pole of her right eye. Fundus fluorescein angiography showed early stippled pin point hyperfluorescence, placoid pooling of the dye and late disc staining in both the eyes. A provisional diagnosis of Vogt Koyanagi Harada disease was made and routine blood investigations and a physician check-up for fitness for systemic steroids was done. Peripheral blood smear showed the presence of blast cells. The patient was diagnosed to have Acute Myeloid Leukemia (AML) and was started on chemotherapy.

Conclusions and Importance: Acute myeloid leukemia can present as an exudative retinal detachment and can mimic similarly presenting conditions like VKH. Hence, this very important differential diagnosis should be kept in mind and it stresses the importance of simple laboratory investigations like whole and differential blood counts.

1. Introduction

Leukemias are malignant neoplasms of the haematopoietic stem cells. Ophthalmic manifestations of leukemias can be divided into direct infiltration, secondary vascular changes and neuro-ophthalmological changes. Leukemias can involve almost every part of the human eye. Retina and choroid are the most common ocular tissue involved.[1,2] Leukemic retinopathy is seen as multiple white centred haemorrhages, cotton wool spots, vascular tortuosity and dilatation.[1,2] Choroidal involvement is usually by perivascular infiltration[1] and clinically, presents as a shallow serous retinal detachment at the posterior pole and can present as a first sign of the disease or as a first sign of relapse.[3–6]

2. Case report

A 30-years old female presented to us with insidious onset of painless diminution of vision from her right eye for one month. She had consulted locally and was diagnosed to have exudative retinal detachment of the right eye and was referred to our hospital for the same. She gave history of fever and severe headache at the time of onset of ocular symptoms. Her past ocular and medical history was insignificant.

On ocular examination her right eye best corrected visual acuity was 6/18, less than N36 with a plus 8D hyperopic correction and 6/6, N6 in the left eye. Intraocular pressure on applanation tonometry was 12 mm of Hg in both the eyes. Both eyes had normal pupillary reflexes, normal ocular adnexa, quiet anterior chamber, clear lens and no vitreous cells in anterior vitreous face. Fundus examination of the right eye revealed a clear vitreous, neurosensory detachment at the posterior pole involving the fovea and extending towards the

Abbreviations: BCVA, best corrected visual acuity; AML, Acute Myeloid Leukemia; ALL, Acute Lymphoblastic Leukemia; SS-OCT, Swept Source Optical Coherence Tomography; FFA, Fundus Fluorescein Angiography; IVMP, Intravenous Methyl Prednisolone; VKH, Vogt Koyanagi Harada's disease.

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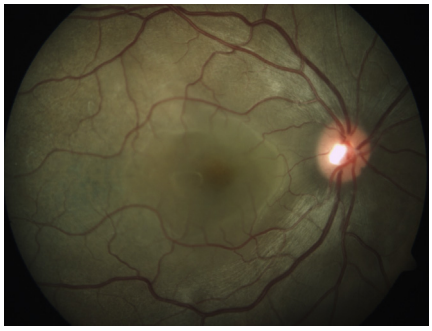

Fig. 1. Colour fundus photo of the right eye at presentation, showing exudative retinal detachment at the posterior pole.

inferior retina and with few retinal haemorrhages in the posterior pole (Fig. 1). Fundus examination of the left eye was normal. She was advised ultrasound B scan, Fundus fluorescein angiography (FFA) and swept source OCT (SS-OCT).

Ultrasound B scan showed localized retinal detachment temporal to optic nerve head involving macula in the right eye with increased peripapillary choroidal thickness. Swept source OCT was suggestive of intra-retinal fluid with sub-retinal fluid and choroido-scleral interface was not visible due to shadowing in the right eye (Fig. 2). Fundus fluorescein angiography revealed early stippled pin point hyperfluorescence, placoid pooling of the dye in right eye and late disc staining in both the eyes (Figs. 3 and 4).

Based on her systemic complaints and ancillary investigations, a provisional diagnosis of Vogt Koyanagi Harada disease with asymmetric unilateral involvement was made. The patient was advised to undergo routine blood investigations and a physician check-up for fitness for systemic steroids. The blood investigations revealed a whole blood count (WBC) of 58.1 $\times$ $10^3/\mu L$ (Normal range = 4–10 $\times$ $10^3/\mu L$) and peripheral blood smear showed presence of 95% blast cells. She was referred to a haematologist. A diagnosis of Acute Myeloid Leukemia (AML) was made and the patient was started on chemotherapy.

The patient turned up after two months and on examination her best corrected visual acuity was 6/45, N24 in the right eye and 6/6, N6 in the left eye. Both eyes intraocular pressure was normal and had a normal anterior segment. Fundus examination revealed extensive subretinal fluid in the right eye with hyperaemic disc (Fig. 5) and a normal fundus in the left eye. Swept source OCT was suggestive of intra-retinal fluid with sub-retinal fluid and choroido-scleral interface was not visible due to shadowing in the right eye.

After receiving clearance from haematologist, she was given 3 doses of intravenous methyl prednisolone and was started on oral steroids and was reviewed after one month. After one month of follow up; her BCVA was 6/24 N10 in the right eye and 6/6 N6 in the left eye. Both eyes intraocular pressure was normal and had a normal anterior segment. Fundus examination revealed disc edema and optic nerve head infiltration in the right eye with multiple retinal pigment epithelial level lesions and subretinal fluid and a thinned out retina. As there was no progress in ocular as well as in her systemic conditions even after two months of chemotherapy, patient was advised bone marrow transplantation.

3. Discussion

Zimmerman was the first to report vision loss in leukemic patients, in 1964.[7] Ophthalmic manifestations of leukemia are varied.[8–10] Exudative retinal detachment have been described only in few cases of acute lymphoblastic leukemia (ALL).[3–6]

Our case, otherwise a healthy young female presented with unilateral exudative retinal detachment and FFA showed typical starry sky appearance with multiple pin point hyper-fluorescent spots in the early phase, pooling of the dye and bilateral disc staining in the late phase. Presence of prodromal symptoms like fever, headache with exudative retinal detachment and FFA findings made the authors to think about unilateral VKH disease.

It is well understood now that choroidal involvement in various systemic diseases can lead to exudative retinal detachment.[4,11,12] Choroidal ischaemia from occlusion of choriocapillaries, retinal pigment epithelium and bruch's membrane dysfunction, leukemic cells infiltration and haematological disturbances are the various mechanisms leading to exudative retinal detachment.[13–15] Exudative retinal detachment is a rare manifestation of leukemic disease, but has been reported previously.[1,3,4] In the majority of reported literature of exudative retinal detachment associated with leukemic diseases, the systemic disease had been diagnosed prior to the development of ocular involvement. Exudative detachment of retina with systemic symptoms mimicking VKH disease is indeed a rare presentation in patients with leukemic diseases.

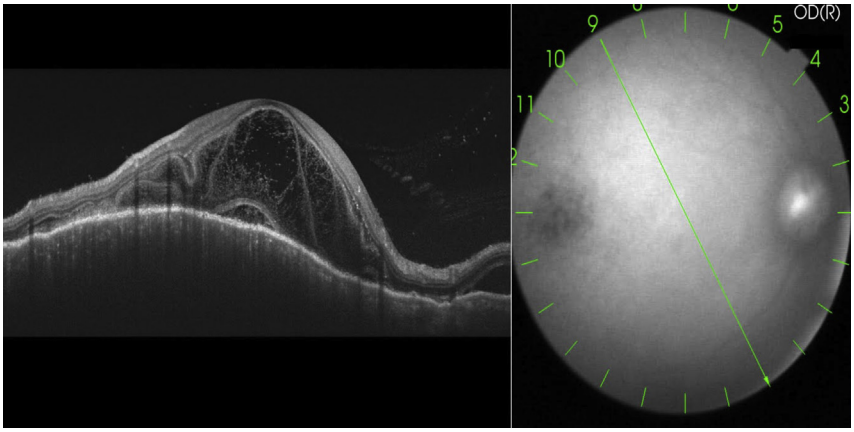

Fig. 2. Swept Source Optical Coherence Tomography at presentation, showing intra-retinal fluid in multiple compartments along with fibrin within the photoreceptor layer. Foveal detachment is seen with multiple areas of sub-retinal fluid. Choroidoscleral interface not visible due to shadowing. Retinal pigment epithelium alterations along with hyper reflective dots are seen at superficial choroid and vitreous.

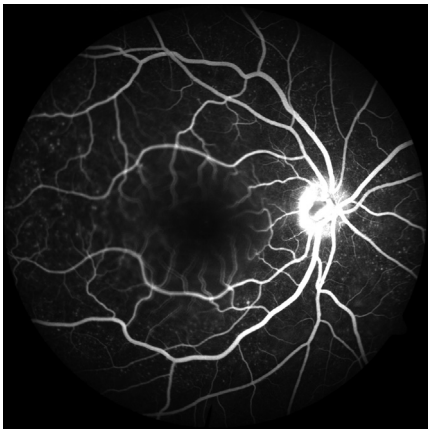

Fig. 3. Fundus fluorescein angiography showing multiple pin point leakages temporal to macula which shows sub-retinal fluid. The disc staining is also evident.

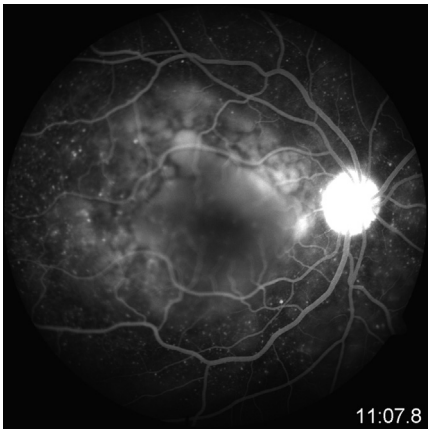

Fig. 4. Fundus fluorescein angiography showing placoid pooling of the dye in late frames of angiogram.

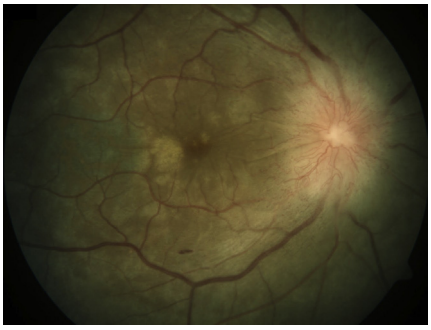

Fig. 5. Colour fundus photo of the right eye after three months of initial presentation, showing sub-retinal fluid with increased sub-retinal exudation and optic nerve head infiltration is also seen.

4. Conclusion

Thus, AML can present as an exudative retinal detachment and can mimic similarly presenting conditions like VKH. Hence, this very important differential diagnosis should be kept in mind and it stresses the importance of simple laboratory investigations like whole and differential blood counts.

Patient consent

Written consent to report the details of this case was obtained from the patient.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

HS: data analysis, and drafting manuscript. PMR: patient interaction, diagnosis, was involved in revising the manuscript critically. JB& CR: patient interaction, diagnosis, was involved in revising the manuscript critically and gave final approval of the version to be published.

All authors read and approved the final manuscript.

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