Systemic diffuse large B-cell lymphoma masquerading as neovascular glaucoma

Pritam Bawankar, Dipankar Das[1], Harsha Bhattacharjee, Shahinur Tayab[2], Nilutparna Deori[3], Vivek Paulbuddhe[3], Shriya Dhar[3], Apurba Deka[4]

We describe a case of spontaneous hyphema associated with anterior uveitis presents in a 69-year old female as the prominent sign of the intraocular spread of systemic diffuse large B-cell lymphoma (DLBCL). She had a history of diabetes and initially misdiagnosed as neovascular glaucoma. Clinical history of systemic lymphoma, characteristic findings on B-scan ultrasonography and magnetic resonance imaging scan, and identification of atypical lymphoid cells in aqueous sample established the diagnosis of intraocular metastasis of systemic DLBCL. Therefore, this report highlights that life-threatening malignant systemic lymphoma may masquerade as anterior segment ocular inflammation or neovascular glaucoma.

Key words: Diffuse large B-cell lymphoma, intraocular lymphoma, metastatic systemic lymphoma, neovascular glaucoma, non-Hodgkin's lymphoma

Access this article online

Quick Response Code:

Website: www.ijo.in

DOI: 10.4103/ijo.IJO_746_17

Lymphomas are derived from a monoclonal proliferation of B- or T-cell lymphocytes. Lymphomas of the eye are uncommon and account for 1% of non-Hodgkin's lymphomas (NHL) and <1% of all intraocular tumors.[1] The term "intraocular lymphoma" (IOL) represents a lymphoma involving either the retina or uvea. These tumors start in the eye itself (primary) or spread from the central nervous system (CNS) or other extraocular sites (systemic lymphoma) to the eye (secondary).[1] Systemic lymphomas usually metastasize into the eye through hematogenous spread and comprise 17% of all IOLs. Ocular involvement of systemic lymphoma usually presents as vitritis, posterior uveitis with distinct subretinal infiltrates, occasionally anterior uveitis, and optic nerve involvement.[2,3]

We report a unique case of systemic diffuse large B-cell lymphoma (DLBCL) presented with monocular involvement, initially masquerading as neovascular glaucoma in a diabetic patient.

Case Report

A 69-year-old female patient was referred to the vitreoretinal department of our institute with a diagnosis of neovascular glaucoma in the right eye (RE) and mild nonproliferative diabetic retinopathy in the left eye (LE). She was a diagnosed case of DLBCL with abdominal lymphadenopathy for which

Departments of Vitreo-Retina Surgery, [2]Glaucoma, [3]Ophthalmology, Sri Sankaradeva Nethralaya, [4]Ophthalmology, Laboratory Technician, Sri Sankaradeva Nethralaya, [1]Department of Ocular Pathology, Uveitis and Neuro-Ophthalmology Services, Sri Sankaradeva Nethralaya, Guwahati, Assam, India

Correspondence to: Dr. Pritam Bawankar, Department of Vitreo-Retina Surgery, Sri Sankaradeva Nethralaya, Beltola, Guwahati - 781 028, Assam, India. E-mail: dr.pritambawankar@gmail.com

Manuscript received: 17.08.17; Revision accepted: 21.11.17

Cite this article as: Bawankar P, Das D, Bhattacharjee H, Tayab S, Deori N, Paulbuddhe V, *et al*. Systemic diffuse large B-cell lymphoma masquerading as neovascular glaucoma. Indian J Ophthalmol 2018;66:317-9.

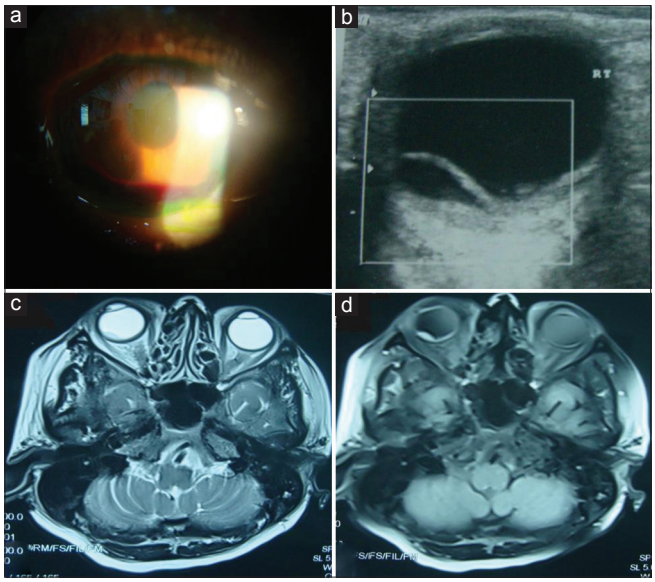

Figure 1: (a) Anterior segment image of the right eye showing hyphema, thin fibrinous reaction at pupillary area, and posterior synechiae at 2–6 o'clock position. (b) B-scan ultrasonography of the right eye showing retinal detachment with diffuse choroidal thickening. T2-weighted (c) and Fat-suppressed T1-weighted (d) imaging shows focal retinal detachment with subretinal exudates in the posterolateral aspects of right eye and the bilateral diffuse thickening of choroid and optic nerve sheath complexes

she underwent 6 cycles chemotherapy 2 years back. Diagnosis at that time was confirmed on bone marrow biopsy and fluorine-18-deoxyglucose-positron emission tomography scan that revealed systemic extranodal lymphomatous sites.

The patient presented to us with pain, redness, and severe loss of vision in the RE over the period of 10 days. Best-corrected visual acuity was light perception in RE and 20/20 in LE at the time of presentation. Slit-lamp examination of RE revealed circumciliary congestion, minimal corneal edema, +3 cells in the anterior chamber (AC), 2 mm of hyphema, posterior synechiae, and iris neovascularization [Fig. 1a]. LE was unremarkable. Intraocular pressure was 41 mmHg in RE and 19 mmHg in LE. Corneal haze, nondilating pupil, and anterior uveitis precluded fundus examination in RE. LE had few dot-blot hemorrhages and hard exudates at the posterior pole on ophthalmoscopy. Her medical history was significant for diabetes mellitus, hypertension, and hyperthyroidism, and the ophthalmic history was unremarkable for glaucoma. B-scan ultrasonography was advised to evaluate the posterior segment of RE that revealed diffuse choroidal thickening with inferior shallow retinal detachment extending to the posterior pole [Fig. 1b]. An unusual occurrence of spontaneous hyphema with anterior uveitis, characteristic finding on B-scan ultrasonography, and a significant history of systemic DLBCL, raised the possibility of the intraocular spread of systemic lymphoma. An immediate AC tap was taken and specimen sent for cytological examination to confirm the diagnosis of IOL. Magnetic resonance imaging (MRI) of the brain and orbit was also advised to locate the distant metastatic foci of systemic lymphoma.

MRI of the brain and orbit [Fig. 1c and d] showed bilateral diffuse thickening of optic nerve sheath complexes. There is also evidence of bilateral choroidal thickening and focal retinal detachment with subretinal exudates in the posterolateral aspect of the RE ball. The retrobulbar fats including extraocular muscles were normal. Cytological examination [Fig. 2] of the aqueous sample revealed large monomorphic lymphoid cells with hyperchromatic nuclei, prominent nucleoli, and a high nuclear/cytoplasmic ratio consistent with the diagnosis of intraocular large B-cell NHL.

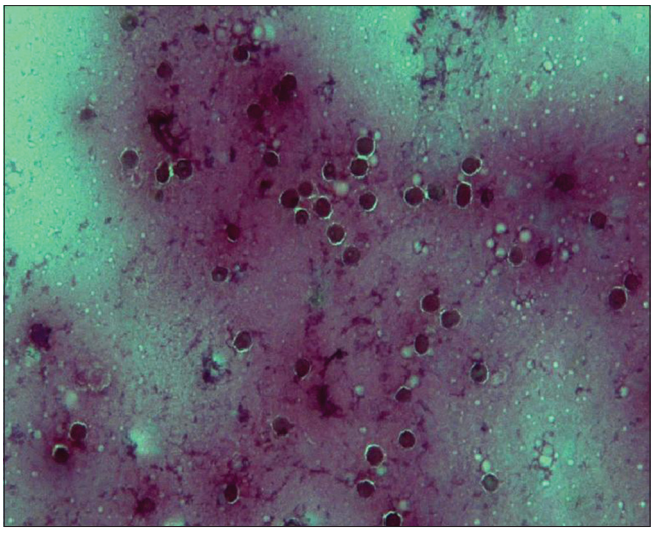

Figure 2: Large atypical monomorphic lymphoid cells with high nuclear/cytoplasmic ratio

The patient was commenced on carbonic anhydrase inhibitors and analgesics in oral doses and topically administered atropine, corticosteroids, and antiglaucoma medication in the RE for the treatment of secondary glaucoma. Subsequently, she was referred to radiation oncologist and hematologist for further management. After that, the patient never visited at our institute, and therefore, the information on further management and follow-up could not assess.

Discussion

Lymphomas are the neoplastic proliferation of lymphocytes, a type of white blood cell. Whereas Hodgkin lymphoma very rarely causes ocular disease, an increasing number of cases of ocular NHL are being reported in the literature.[4] Two forms of IOL can be recognized clinically: (1) vitreoretinal lymphoma, usually associated with CNS NHL; (2) uveal lymphoma, occasionally associated with systemic NHL.[4]

DLBCL is a fast-growing, aggressive, and the most common subtype of NHL, comprising 20%–40% of all lymphomas.[5] In DLBCL, B-cell lymphocytes are usually larger than normal, and they have stopped responding to signals that usually limit the growth and production of cells. This specific subtype of NHL is called diffuse large B-cell because the abnormal large B-cells grow within a lymph node in random locations throughout the lymph node (diffusely) without a specific pattern or architecture.

Systemic lymphomas have a propensity to involve the uveal tissue secondarily and can masquerade itself as a panuveitis and elude diagnosis.[6] IOL can present as anterior segment

granulomatous inflammation, demonstrating the presence of AC cells, keratic precipitates, and pseudohypopyon.[6] Secondary glaucoma is also a common occurrence in patients with IOL with uveal tissue involvement, probably due directly to tumor infiltration of the angle or secondary to angle neovascularization.[7] Mashayekhi *et al*.,[8] in their published case series on iris involvement by lymphoma, demonstrated spontaneous hyphema associated with anterior uveitis as the initial manifestation in 7/14 eyes. Guzak[9] reported a case of spontaneous hyphema presents in adolescence as the prominent sign of systemic lymphoma.

In our case, the diagnosis of neovascular glaucoma in RE was made by referring ophthalmologist based on the history of diabetes, dilated iris vessel with spontaneous hyphema in RE, and the fundus findings consistent with diabetic retinopathy in the contralateral eye. However, hyphema associated with the anterior uveitis is rare, and its occurrence in the proper setting (middle-aged or older patients with the history of systemic lymphoma) raised the possibility of underlying IOL. The clinical presentation of IOL is not diagnostic, and definite diagnosis of this condition requires detection of malignant lymphocytes in ocular tissue or fluid specimens. Cytological examination of the aqueous sample in our case revealed large atypical monomorphic lymphoid cells with high nuclear/cytoplasmic ratio consistent with the diagnosis of intraocular large B-cell NHL. Furthermore, MRI scan of the brain and orbit revealed bilateral ocular involvement by systemic lymphoma. Therefore, the working diagnosis of the intraocular spread of systemic DLBCL was made, and the patient was referred to the oncology service for further investigations and treatment.

Conclusion

This case illustrates that systemic NHL may also recur as long as 2 years later as an intraocular process. The current case also confirms, as previously reported by Mashayekhi *et al*.[8] that lymphomas involving the iris tend to be high grade and aggressive. This report also highlights that life-threatening malignant systemic lymphoma may masquerade as anterior segment ocular inflammation or neovascular glaucoma. A high index of suspicion is mandatory, and ophthalmologists should be aware of this presentation, especially in patients with a history of lymphoma. The key to diagnosing metastatic lymphoma is the presence of a clinical history of systemic lymphoma and identification of atypical lymphoid cells in the ocular tissue or fluid specimens.

Acknowledgment

We would like to thank Sri Kanchi Sankara Health and Educational Foundation, Guwahati, India.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Bardenstein DS. Intraocular lymphoma. Cancer Control 1998;5:317-25.
2. Goeminne JC, Brouillard A, Jaumain P, Ferrant A, Snyers B, De Potter P, *et al*. Bilateral granulomatous panuveitis as initial presentation of diffuse systemic T cell lymphoma. Ophthalmologica 1999;213:323-6.
3. Mashayekhi A, Shukla SY, Shields JA, Shields CL. Choroidal lymphoma: Clinical features and association with systemic lymphoma. Ophthalmology 2014;121:342-51.
4. Barr CC, Joondeph HC. Retinal periphlebitis as the initial clinical finding in a patient with Hodgkin's disease. Retina 1983;3:253-7.
5. Rasmussen PK. Diffuse large B-cell lymphoma and mantle cell lymphoma of the ocular adnexal region, and lymphoma of the lacrimal gland: An investigation of clinical and histopathological features. Acta Ophthalmol 2013;91:1-27.
6. Filipec M, Karel I, Michalicková M. Malignant intraocular lymphoma. Cesk Oftalmol 1993;49:72-5.
7. Raju VK, Green WR. Reticulum cell sarcoma of the uvea. Ann Ophthalmol 1982;14:555-60.
8. Mashayekhi A, Shields CL, Shields JA. Iris involvement by lymphoma: A review of 13 cases. Clin Exp Ophthalmol 2013;41:19-26.
9. Guzak SV Jr. Lymphoma as a cause of hyphema. Arch Ophthalmol 1970;84:229-31.