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Case Report

Intraocular involvement of T-cell lymphoma presenting as inflammatory glaucoma, neurotrophic keratopathy, and choroidal detachment

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Abstract

Intraocular involvement of T-cell lymphoma is rare. We report a case presented with inflammatory glaucoma, neurotrophic keratopathy, and choroidal detachment. An 81-year-old man presented with unilateral high intraocular pressure and keratic precipitates. Polymerase chain reaction of the aqueous humor was negative for herpes simplex virus type 1 and 2, varicella zoster virus, and cytomegalovirus. Progressive pupil dilatation, cornea anesthesia with large epithelial defect, and choroidal detachment were noted in the following month. Diagnostic vitrectomy was then performed, and cytology of the vitreous suggested malignant lymphoma. Further systemic workup revealed ulcerative lesions in the stomach, and biopsy with special stains led to the diagnosis of peripheral T-cell lymphoma of the stomach with ocular involvement. Intraocular involvement of T-cell lymphoma is very rare. Most typically, the skin, followed by the central nervous system, has the most frequently occurring concurrent systemic involvement. In fact, stomach involvement has not been reported. Most cases of intraocular lymphomas presented with vitritis and anterior uveitis, and elevated intraocular pressure was not commonly observed. A review of the literature indicates that a large corneal epithelium defect has been described only in a case of peripheral T-cell lymphoma with the involvement of sclera and oropharynx. Although very rare, inflammatory glaucoma, neurotrophic keratopathy, and choroidal detachment can be the initial presentation of intraocular involvement of T-cell lymphoma.

Keywords: choroidal detachment; inflammatory glaucoma; intraocular T-cell lymphoma; neurotrophic keratopathy; uveitis

1. Introduction

Intraocular lymphomas are rare, and most cases are of B-cell origin and associated with primary central nervous system non-Hodgkin's lymphoma. In Hoffman et al's[1] series with 14 cases of intraocular lymphoma, only three were of T-cell origin. Most cases of intraocular T-cell lymphomas are secondary to systemic lymphomas.[1,2] However, upon presentation of eye symptoms, around 40% of patients with intraocular lymphoma had no known history of previous systemic involvement.[2] The most common ocular manifestation of this disease progression in the eye is vitritis, followed by anterior uveitis.[2] Consequently, chronic steroid nonresponding vitritis or uveitis may generate suspicion of intraocular lymphomas, which are usually proved by vitreous biopsy.[1,2] Then, a more comprehensive patient examination may reveal concurrent systemic involvement,[2] including more commonly the skin, central nervous system, respiratory tract,[3] lymph nodes, bone marrow, retroperitoneal tissues (rarely),[4] testis,[5] liver,[6] and abdomen.[7]

We report a case of peripheral T-cell lymphoma presented with unusual eye features, including inflammatory glaucoma,

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neurotrophic keratopathy, fully dilated pupil, and choroidal detachment. The stomach was then proved to be the concurrent site of systemic involvement, which, to our knowledge, has not been previously reported.

2. Case Report

An 81-year-old male was referred under the diagnosis of inflammatory glaucoma. He had underlying diseases of diabetes mellitus, hypertension, and membranous glomerulonephritis. We examined the patient 2 days after he used 1% prednisolone QID. The best corrected visual acuity was 6/6.7 OD and 6/6 OS; the intraocular pressure (IOP) was 20 mmHg OD and 28 mmHg OS. Slit-lamp examinations showed cells in the anterior chamber and multiple fine keratic precipitates (KPs) in the left eye (Fig. 1A). Other examinations including those of the pupil, vitreous, and retina were normal. The frequency of topical 1% prednisolone increased to every 2 hours, and topical 0.5% timolol was added. The anterior chamber inflammation persisted, and the intraocular pressure fluctuated. At the 1 month follow-up after presentation, the best corrected visual acuity had deteriorated to 6/60 OS. Slit-lamp examinations of the left eye revealed an increase of KPs, a very deep anterior chamber, and a fixed, large dilated pupil. The patient denied using any cycloplegic eye drops. Aqueous tapping was done and sent for polymerase chain reaction analyses of herpes simplex virus types 1 and 2, varicella zoster virus, and cytomegalovirus. The results were all negative. Four days later, nearly total corneal epithelial defect with stromal edema and a decrease in corneal sensation OS were observed (Fig. 1B). The anterior chamber remained very deep. Fundoscopy revealed choroidal detachment. The vitreous and retina could not be seen clearly because of corneal edema and hazy media. No obvious retinal infiltration patch could be observed. Orbital magnetic resonance imaging revealed a marked increase in the anterior chamber depth, signal enhancement of the ciliary body, and fluid accumulation in the suprachoroidal space in the left eye (Fig. 2). The epithelial defect and choroidal detachment persisted despite the application of a therapeutic contact lens, tarsorrhaphy, and oral plus peribulbar injection of corticosteroids. Diagnostic vitrectomy was then performed, and cytology showed medium- to large-sized lymphoid cells with pleomorphic nuclei, suggesting malignant lymphoma (Fig. 3A).

On the 2nd day after vitrectomy, the patient complained of epigastralgia. An upper gastrointestinal endoscopy was performed, which revealed a large ulcer at the stomach. Because malignancy was suspected, a biopsy was performed; pathological results were consistent with peripheral T-cell lymphoma that stained positively for CD3 and leukocyte common antigen (LCA) and negatively for cytokeratin (CK), L26, and CD20 (Fig. 3B–E). However, further systemic survey of the patient did not reveal tumor involvement of other organs. Arrangements were then made for the patient to undergo chemotherapy. Unfortunately, he expired 10 days after starting the treatment due to massive gastric bleeding and multiple organ failure.

3. Discussion

Intraocular lymphoma is considered as one of the differential diagnoses of uveitis masquerade syndrome. The most common presenting feature was reported to be vitritis, followed by anterior uveitis.[1,2] The incidence of elevated IOP was relatively low. In Hoffman et al's[1] series of 14 cases of intraocular lymphoma, only two cases presented with elevated IOP, and none of the T-cell lymphoma patients had raised IOP. In a review of 29 cases, Levy-Clarke et al[2] described only one case with elevated IOP. This specific patient also presented with iris nodules and pseudohypopyon.[8] Our patient was referred to our clinic with a preliminary diagnosis of inflammatory glaucoma, the cause of which was unknown. Correct diagnosis of our patient was delayed because viral infection was our first impression, and the aqueous humor, which was later aspirated, was an insufficient basis for further cytological examination. In fact, because most cases of intraocular lymphoma presented as vitritis, the diagnosis depended mostly on vitreous biopsy and not on aqueous biopsy.[1,2] Our case indicated an important finding that inflammatory glaucoma can be the earliest sign of intraocular lymphoma, even earlier than vitritis.

Other unique findings of our patient were neurotrophic keratopathy with nearly total epithelial defect, a fixed and very large dilated pupil, an extraordinarily deep anterior chamber, and choroidal detachment. Magnetic resonance imaging of the

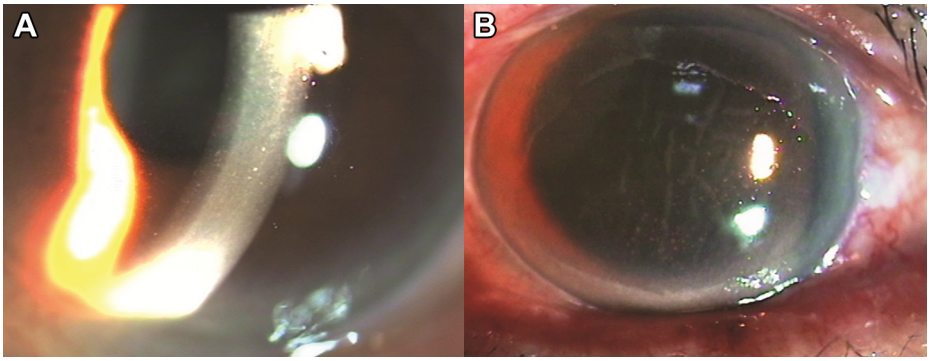

Fig. 1. (A) Slit photography at presentation shows fine pigmented keratic precipitates and normal-sized pupil. (B) One month after presentation, there is a large epithelial defect in an anesthetic cornea at follow-up. The keratic precipitates are larger and increased in number. The pupil is fixed and very largely dilated without using any cycloplegics.

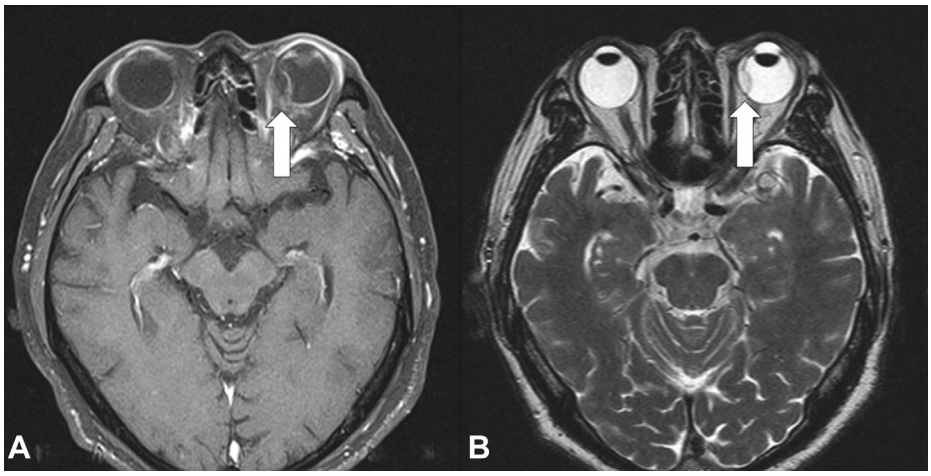

Fig. 2. Magnetic resonance imaging of the orbit. (A) T1-weighted image after contrast shows signal enhancement of the ciliary body and choroidal detachment in the left eye. (B) T2-weighted image shows that, compared with the right eye, the anterior chamber of the left eye is very deep. The signal of suprachoroidal fluid is hypodense in the T1-weighted image and hyperdense, but less than that of the vitreous, in the T2-weighted image.

orbit revealed signal enhancement of the ciliary body in T1-weighted image. The signal density of suprachoroidal effusion was less than that of vitreous in the T2-weighted image. This evidence suggested tumor cell infiltration of the ciliary body and choroid, which may compromise the innervation and/or circulation of anterior segment. Tumor cell infiltration of the choroid had been reported in previous literature,[2] but choroidal detachment has not yet been described. Kirn et al[3] had described a patient with peripheral T-cell lymphoma who presented with sclerouveitis, elevated IOP, anesthetic cornea with large epithelial defect, and scleral and conjunctival ischemia, but no choroidal detachment. Their study and ours shared many similar findings not usually described in other reports, especially the signs of anterior segment ischemia.

Our patient also had a history of membranous glomerulonephritis and had been followed up regularly for more than 10 years. Wald et al[9] reported the occurrence of choroidal effusions in two patients with glomerulonephritis. Uvea and glomerulus have a similar structure and function. Immune-mediated vascular damage may result in glomerulonephritis as well as choroidal effusions.[9] Therefore, we think that the specific finding of choroidal detachment in our patient is more likely due to a combined effect of underlying glomerulonephritis and tumor cell infiltration.

Ophthalmologists have a particularly important role in the diagnosis of intraocular lymphoma because eye symptoms were the initial presentation of 43% of intraocular involvement of T-cell lymphomas.[2] The skin and central nervous system were detected to have the most common concurrent systemic involvement. Our patient had stomach involvement, which had not been reported previously. Goldey et al[7] reported a case of intraocular T-cell lymphoma with concurrent extensive involvement of small bowel, retroperitoneum, and mesentery. The patient also presented with a markedly dilated pupil. Consequently, although rare, the gastrointestinal tract should also merit attention when searching for concurrent systemic

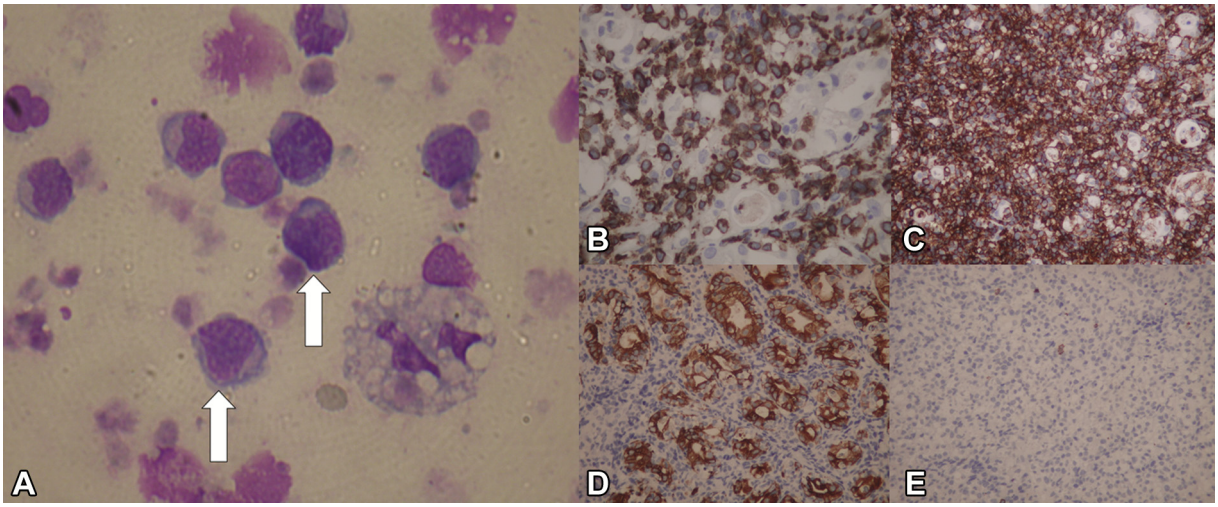

Fig. 3. (A) Cytology of the vitreous (Liu stain) shows medium- to large-sized lymphoid cells with pleomorphic nuclei, which are compatible with malignant lymphoid cells (arrow; 400×). Specimens of stomach biopsy under light microscopy show malignant lymphoma cells under various immunostains: (B) positive for CD3, (C) positive for LCA, (D) negative for CK, and (E) negative for L26/CD20 (400×).

involvement, especially in the presence of inflammatory glaucoma, neutrophic keratopathy, or fixed dilated pupil.

Therapeutic modalities for intraocular lymphoma include whole brain and/or globe irradiation, systemic chemotherapy, intrathecal chemotherapy, and intravitreal chemotherapy.[1,3] The mortality rate associated with intraocular lymphoma is high. In a series of 14 patients, 11 (79%) died as a result of lymphoma. The time period from intraocular diagnosis until death ranged from 1 month to 52 months (median 9 months).[1] Of the reported cases with systemic (nonmycosis) T-cell lymphoma with intraocular involvement, similar to our patient, two-thirds have died with a median survival of 8 months after diagnosis of the eye disease.[5]

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