

Ocular Toxoplasmosis Presenting as Subretinal Macrocyst

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Abstract

Purpose: To report a case of unilateral retinal detachment with a large subretinal macrocyst, representing an atypical presentation of ocular toxoplasmosis.

Case Report: A healthy 30-year-old woman presented with a two month history of progressive visual loss in her right eye. Funduscopy revealed vitreous condensations, total retinal detachment with a large subretinal orange-red cystic mass and multiple retinal breaks sealed with surrounding retinal scars. B-scan echography showed a large subretinal cyst with non-homogenous tissue echogenicity. Pars plana deep vitrectomy and complete cyst removal were performed. Histopathologic examination of the excised cyst revealed intraretinal toxoplasma cysts containing bradyzoites. Analysis of intraocular fluids by polymerase chain reaction (PCR) and serologic tests also supported the diagnosis. After six months, the retina was completely attached with no signs of inflammation.

Conclusion: Toxoplasma retinochoroiditis should be considered in the differential diagnoses of retinal detachment with subretinal cyst.

Keywords: Intraocular Infection; Macrocyst; Ocular Toxoplasmosis; Retinal Detachment; *Toxoplasma Gondii*

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INTRODUCTION

Ocular toxoplasmosis is one of the most common infectious causes of posterior uveitis worldwide. Ocular toxoplasmosis is mainly diagnosed by the clinical observation of a fluffy

white lesion adjacent to a pigmented chorioretinal scar and moderate to severe vitreous cellular reaction. Many atypical presentations of ocular toxoplasmosis, especially in immunocompromised and elderly patients, have been described.^[1] Rhegmatogenous retinal detachment (RRD) is an atypical presentation of ocular toxoplasmosis with frequency of 6%–11%.^[2,3] In atypical cases with RD or retinitis mimicking other infectious or non-infectious entities or when retina is obscured by dense vitritis, analysis of intraocular fluid may be extremely helpful in identifying *Toxoplasma gondii* as the causative organism. Here, we

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report a rare and challenging case of ocular toxoplasmosis presenting with RRD and a large subretinal cyst, which has not been previously reported in the literature.

CASE REPORT

A healthy 30-year-old woman presented with a two-month history of progressive visual loss in her right eye. Past medical, ocular, and drug histories were unremarkable. On ocular examination, visual acuity in the right eye was hand motion (HM) and in the left eye 10/10. Relative afferent pupillary defect and exotropia without limitation of movement was present in the right eye. Slit lamp examination of the right eye showed a clear anterior chamber, but there were 1+ cells and pigments in the anterior vitreous. Posterior segment examination revealed vitreous condensations, total rhegmatogenous retinal detachment (RRD) with proliferative vitreoretinopathy grade C (PVR-C), subretinal fibrous bands, shifting fluid, a large subretinal orange-red cystic mass in the inferonasal part, and multiple retinal breaks sealed with surrounding retinal scars [Figure 1]. B-scan echography showed a large subretinal cyst (8.5 × 7 × 6 mm) with non-homogenous tissue echogenicity [Figure 2]. The left eye was entirely normal. Fluorescein angiography of the right eye showed disc leakage. Results of laboratory investigations for complete blood count, erythrocyte sedimentation rate, urea and electrolytes, and urine analysis were in the normal range. Because hydatid cyst of retina and cysticercosis were the main differential diagnoses, brain and orbital magnetic resonance imaging (MRI) were performed. There was no mass or cyst in the brain or orbits. Dry vitreous biopsy was performed and polymerase chain reaction (PCR) analysis was negative for hydatid or cysticercus cysts and no malignant cells were detected in cytology. Finally, pars plana deep vitrectomy and retinotomy were performed. The cyst was fused with the retina, therefore cystotomy and drainage of the intra-cyst bloody fluid was performed and the cyst with overlying retina were completely excised followed by endolaser photocoagulation and silicone oil tamponade. Histopathologic examination of the excised cyst revealed intraretinal toxoplasma cysts containing bradyzoites [Figure 3]. The fluid inside the cyst as well as the subretinal fluid and vitreous were positive for *T. gondii* DNA on PCR. Serologic tests by enzyme-linked immunosorbent assay (ELISA) supported the diagnosis by demonstrating positive IgG antibody. No systemic medications were prescribed.

After six months of follow up, vision improved to 1-meter counting fingers and the retina showed complete reattachment.

DISCUSSION

T. gondii infection is the most common cause of infectious posterior uveitis in immunocompetent individuals and

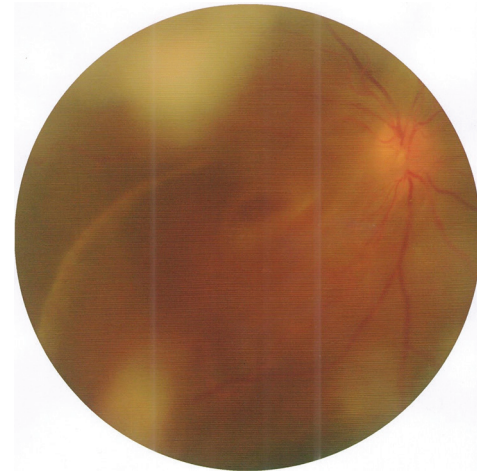


Figure 1. Color fundus photograph of the right eye shows vitreous condensations, retinal detachment, and subretinal bands.

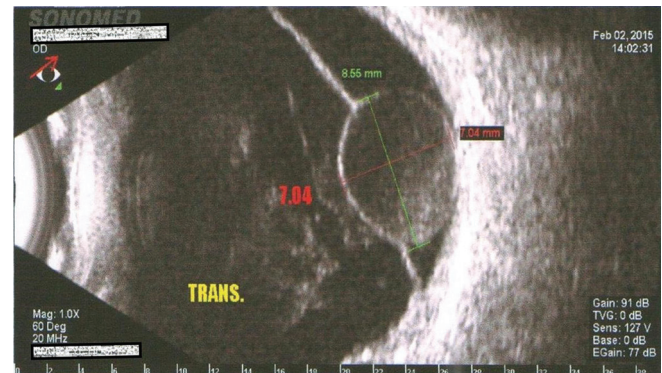


Figure 2. B-scan echography shows multiple point-like echogenic opacities in vitreous (vitritis) and a large subretinal cyst consisting of some non-homogenous hyperechoic spots with overlying retinal detachment.

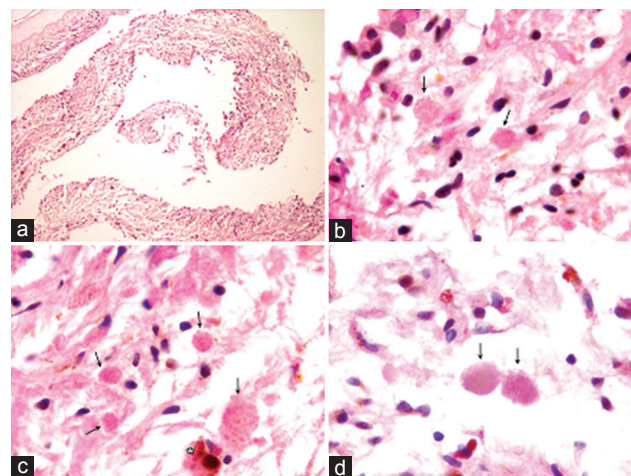


Figure 3. Histopathologic photomicrographs (a) Low power view of degenerated retina with disorganization of retinal layers and scattered infiltration of chronic inflammatory cells (PAS × 10); (b and c) Intraretinal toxoplasma cysts containing bradyzoites (arrows) and hemosiderin-laden macrophage (*) (PAS × 100); (d) Two degenerating toxoplasma cysts (PAS × 100).

the second in patients with HIV/AIDS.^[4-6] If parasites reach the eye through blood circulation, retina would be the primary site for multiplication of parasites; this could stimulate inflammatory responses and result in necrotizing retinochoroiditis (primary or recurrent). Activation of the immune responses may induce transformation of tachyzoites to bradyzoites and cyst formation. Rupture of tissue cysts within old scars may cause reactivation of retinitis.^[7,8]

Although typical cases of ocular toxoplasmosis are diagnosed by clinical examination, atypical presentations may be more challenging as they resemble various other infectious and non-infectious causes of posterior uveitis. Many atypical presentations of ocular toxoplasmosis have been described, including punctate outer retinal toxoplasmosis, neuroretinitis, papillitis, pseudomultiple retinochoroiditis, Coats-like retinopathy, pigmentary retinopathy, retinal vascular occlusion, Roth spots, RD, optic disc granuloma, scleritis, and uveitis in the absence of overt retinitis.^[1] Atypical cases may require either vitreous or aqueous sample analysis to document the diagnosis. Histopathology is another criterion for diagnosis, but it is impractical and rarely used clinically. A retinal biopsy may be required to elucidate the diagnosis in a highly atypical case.

In the presented case, there was total RRD with PVR-C, shifting fluid, and a large subretinal cyst. The patient had noticed the problem two months before presentation. Due to the inferior location of the breaks, the RRD may have backdated to more than three months earlier and remained undetected until the macula was involved. Longstanding RRD can cause changes in retinal anatomy such as retinal pigment epithelial atrophy, demarcation lines, retinal macrocyst formation, and neovascularization. Hagler and North first described retinal macrocysts and emphasized that macrocysts were associated with RRD of more than six months duration and tended to be both well-circumscribed and located at the equator.^[9] Retinal macrocysts occur in the outer plexiform layer of the retina; this localization may be due to the loose synaptic connections and watershed area of the retinal circulation in this layer.^[10] Moreover, in a consecutive series of 470 cases of RRD, 25 patients (5%) were found to have shifting subretinal fluid (SRF) during preoperative examination. The study showed that the association between shifting SRF and RRD is unusual but not rare. Shifting SRF was most often associated with aphakic and longstanding RRD and was found in cases with small retinal holes. Large subretinal cyst, shifting fluid, PVR, and exotropia in this case could be related to long standing RRD secondary to necrotizing toxoplasma retinochoroiditis and self-sealing retinal breaks. Initially, our differential diagnoses included ocular hydatid cyst, cytotoxicosis, and metastatic tumors. Systemic work-up, PCR, and cytology examination of vitreous samples, brain, and orbital MRI were performed to rule out these

diagnoses. Ocular toxoplasmosis was not considered in the differential diagnoses because there was no active toxoplasma lesion in the fundus examination, and chorioretinal hyperpigmented lesions surrounding retinal breaks were thought to be associated with longstanding RRD. Therefore, serologic tests for toxoplasmosis were not among our initial work-up prior to vitrectomy. When the pathological examination of the excised cyst revealed toxoplasmosis, complementary work-up including analysis of cyst contents, subretinal fluid, and vitreous samples by PCR and serologic tests confirmed a very rare presentation of ocular toxoplasmosis as subretinal cyst, which has not been reported before.

In conclusion, our case showed that ocular toxoplasmosis should be considered in the differential diagnosis of subretinal macrocyst and retinal detachment.

Declaration of Patient Consent

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

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Conflicts of Interest

There are no conflicts of interest.

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