A Case of Ocular Toxoplasmosis Imaged with Spectral Domain Optical Coherence Tomography

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Toxoplasma gondii infection is distributed worldwide and toxoplasmic retinochoroiditis is the most common form of posterior uveitis in otherwise healthy individuals [1]. The eyes appear to be especially susceptible to Toxoplasma infection, which may be a result of the blood-retinal barrier that limits antibody penetration to the ocular tissues. If a parasite reaches the eye, the focus of infection is established, which progresses from retinitis to secondarily involve the choroid. The host’s immune response appears to induce the conversion of the tachyzoite to bradyzoite and encystment in the Toxoplasma life cycle, and a large number of T cells are found in retinal lesions and in the choroid. Infiltrating T lymphocytes may play a role in the early recognition of Toxoplasma in the eye. Healing of the lesion occurs with control of the acute infection and scar formation. The cyst may remain inactive in the scar or adjacent to it for a period of years. Ultimately, the cyst wall may rupture, releasing organisms into the surrounding retina and resulting in recurring retinitis. As a result, the initial lesion can cause damage to the inner retinal layers adjacent to an old chorioretinal scar and can be accompanied by vitritis [2]. Here, we review a case of ocular toxoplasmosis imaged using spectral domain optical coherence tomography (SD-OCT; Cirrus HD-OCT, Carl Zeiss Meditec Inc., Dublin, CA, USA). Visual acuity, fluorescein angiography (FAG), blood serology and treatment are also discussed.

Key Words: Ocular toxoplasmosis, Retinochoroiditis, Spectral domain optical coherence tomography

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hyperreflectivity, thinning of the neurosensory retina and a disorganized retinal pigment epithelium (RPE) layer (Fig. 2C). Serum IgM was negative but an elevated serum level of IgG (75 IU/mL; reference value, <4 IU/mL) to toxoplasma was observed. A syphilis evaluation and other tests which were toxocariasis and rheumatologic tests were negative. A presumptive diagnosis of toxoplasmic retinochoroiditis was made and a regimen of trimethoprim/sulfamethoxazole 960 mg po bid and clindamycin 150 mg po qid was started. Prednisone (30 mg/day) was added and tapered over a period of four weeks. Six weeks later, the lesion had resolved (Fig. 3A) and the patient’s right-eye visual acuity had improved to 20/20. SD-OCT performed after treatment showed thinning of the retina, a disorganized RPE layer and posterior hyaloid detachment (Fig. 3B).

**Discussion**

The diagnosis of ocular toxoplasmosis is most often
based on the presence of characteristic clinical findings, which include focal retinochoroiditis, an adjacent or nearby retinochoroidal scar, and moderate to severe vitreous inflammation [3]. OCT is a noninvasive imaging modality that provides high-resolution, cross-sectional images of the retina. The recent introduction of SD-OCT has enabled imaging with greater resolution, higher scan speed, wider sampling area, and improved image registration [4]. Typical OCT findings of ocular toxoplasmosis include increased intraretinal reflectivity corresponding to the area of retinitis with shadowing of the underlying choroidal tissue. Posterior hyaloid thickening and detachment over the lesion and contained irregular hyperreflective formation are also typical [5].

Here we reported a case of ocular toxoplasmosis with abnormal thinning of the neurosensory retina, disrupted RPE and posterior hyaloid detachment in the lesion on SD-OCT. The posterior hyaloid was markedly thickened and exhibited irregular hyperreflectivity. SD-OCT also showed the loss of normal intraretinal striations in the areas of retinitis and the epiretinal membrane in detail. These features were detected SD-OCT than time domain OCT. Moreover, SD-OCT allowed real-time imaging of these manifestations in three dimensions (3D). Specifically, 3D imaging allows for unique perspectives of the retina, including qualitative assessments, such as membrane traction, to be performed and incorporated into clinical decision-making. The use of SD-OCT is helpful for definitively differentiating ocular toxoplasmosis from other retinal diseases and may provide insight for understanding the pathophysiologic mechanisms of ocular toxoplasmosis. Furthermore, SD-OCT allows for the detection of detailed pathologic changes that occur during treatment and precludes the need to perform biopsies.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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