Optical Coherence Tomography Findings of Active Ocular Toxoplasmosis Complicated with Serous Macular Detachment: Case Report

Seröz Makula Dekolmanına Yol Açan Aktif Oküler Toksoplazmozisteki Optik Koherens Tomografi Bulguları

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ABSTRACT In this study we present the structural vitreoretinal changes observed during the clinical follow-up of a 35-year-old female patient presenting with serous macular detachment complicated with active ocular toxoplasmosis. The patient applied to the ophthalmology outpatient clinic with the complaint of impaired vision in the left eye; during her clinical follow-up her active toxoplasma chorioretinitis and accompanying serous macular detachment (SMD) in the macula of the same eye were evaluated with optical coherence tomography (OCT). In the OCT sections encompassing the active lesion, there was increased reflectance and thickening in posterior hyaloid membrane and retinal layers as well as local fluid collection in the subretinal space. Secondary to increased retinal reflectance, retinal pigment epithelium-choriocapillaris junction demonstrated focal shadowing. The clinical findings of the patient improved with treatment. During her control OCT examination, it was seen that posterior hyaloid membrane at the site of the lesion was detached, collected fluid underneath the retina was resolved, retinal tissue became thinner with irregular layers and the suppressed reflectance of the retinal pigment epithelium-choriocapillaris junction was partially improved. OCT sections at the level of macula demonstrated total disappearance of SMD.

Key Words: Toxoplasmosis, ocular; tomography, optical coherence; retinal detachment

ÖZET Bu çalışmada aktif oküler toksoplazmozise eşlik eden seröz makula dekolmanlı (SMD) 35 yaşındaki bir kadın olgunun klinik takipleri boyunca görülen vitreoretinal yapısal değişiklikleri sunulmaktadır. Göz hastalıkları polikliniğine sol gözündeki görme azlığı şikayeti ile başvuran olgunun başvuru ve klinik takipleri esnasındaki aktif toksoplazma korioretiniti ve aynı gözün makulasındaki eşlik eden SMD'si optik koherens tomografi (OKT) yardımıyla değerlendirildi. Aktif lezyon üzerinden geçen OKT kesitlerinde arka hyaloid zar ve retinal katmanlarda reflektans ve kalınlık artışı yanında komşu retina altı mesafelerde yer yer sıvı koleksiyonu tespit edildi. Artmış retina reflektansına ikincil olarak retina pigment epiteli-koryokapillaris bileşkesinde yer yer gölgelenme gözlenildi. Tedavi ile klinik bulgularında gerileme tespit edilen olgunun kontrol OKT incelemelerinde lezyon yerindeki arka hyaloid zarın dekole olduğu, retina altı sıvı koleksiyonlarının çekilerek retina dokusunun incelip katmanlarının düzensizleştiği ve retina pigment epiteli-koryokapillaris bileşkesine ait baskılanmış reflektansinin kısmen geriye döndüğü görüldü. Makuladan geçen OKT incelemelerinde ise SMD'nin tamamen kaybolduğu izlenildi.

Anahtar Kelimeler: Toksoplazmozis, okuler; tomografi, optik koherens; retina dekolmanı

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Ocular toxoplasmosis (OT) is a cause of infectious uveitis worldwide;and although encountered frequently, its treatment remains to be clarified.[1,2] Better understanding of morphologic changes taking place during the disease process might shed light into the develop-

ment of more effective treatment strategies.

Optical coherence tomography (OCT) has been found successful in identifying morphological changes of the retina.[1,3,4] To the best of our knowledge, OCT findings of serous macular detachment (SMD) complicating OT have not been previously published in the literature. This study presents the morphological vitreoretinal changes of an OT case complicated with SMD for the first time in the literature.

CASE REPORT

A healthy looking 35-year-old female patient applied to ophthalmology outpatient clinic with the complaint of impaired vision of the left eye starting in the previous week. In physical examination, visual acuities at the time of presentation were complete on the right and 0.2 on the left eye. In biomicroscopical examination, there was +1 inflammatory reaction in the anterior chamber and the vitreous. Intraocular pressure was measured as 15 mmHg on the right and 17 mmHg on the left eye. In fundoscopic examination, there was a lesion approximately one disc diameter in size located on the left upper temporal quadrant resembling with active toxoplasmosis chorioretinitis and accompanying perivasculitis. In the OCT examination, the sections passing through the chorioretinal lesion revealed small opacities demonstrating reflectance stemming from the inflammatory reaction within the vitreous. Moreover, posterior hyaloid membrane adjacent to the lesion appeared thickened and demonstrated increased reflectance. Retinal layers at the site of the lesion had increased thickness and reflectance while neighboring subretinal spaces had focal fluid collection. Secondary to increased retinal reflectance, retinal pigment epithelium-choriocapillaris junction (RPE-C) had focal shadowing (Figure 1A). OCT sections encompassing fovea revealed the presence of serous macular detachment complicating the clinical presentation (Figure 2A). The patient did not have any systemic diseases. Her blood tests did not show any abnormalities other than anti-T.gondii IgG positivity that could explain this clinical presentation. The patient was diagnosed as ocular toxoplasmosis

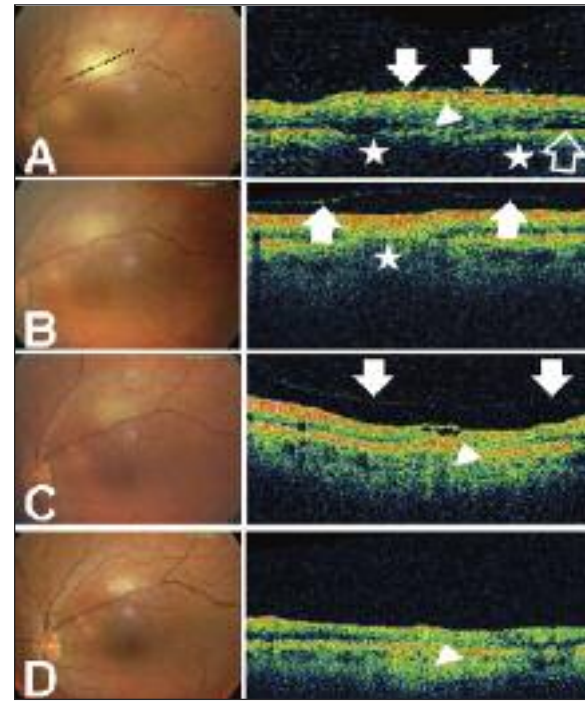

FIGURE 1: Fundus appearances of the active ocular toxoplasmosis patient at the time of admission **(A)**, 2 weeks after **(B)**, 4 weeks after **(C)** and finally 12 weeks after treatment **(D)** and optic coherence tomography sections encompassing the chorioretinal lesion. Posterior hyaloid membrane (white arrow) separated from the lesion surface in time, retinal layers with increased thickness and reflectance (arrow head) became thinner and irregular, the reflectance of the retinal pigment epithelium-choriocapillaris junction (asterisk) increased in time and subretinal fluid collection in the surrounding retina (empty arrow) at the time of admission improved in time.

under the light of her clinical findings and laboratory test results. She was administered combined triple antibiotic treatment (trimethoprim/sulphometaxazole, spiramycin, and clindamycin), and oral prednisolone was added at a dose of 1 mg/kg/day three days later.

Visual acuity of the left eye was measured as 0.7 in her control visit two weeks later; anterior chamber reaction was disappeared and vitreal inflammation was reduced. In the control OCT examination, retinal thickness at the site of chorioretinal lesion decreased, posterior hyaloid membrane covering it separated completely, and fluid accumulation in the surrounding retinal tissue disappeared (Figure 1B). In macular OCT examination, SMD was improved although still present, (Figure 2B). In fundus fluorescein angiogram

(FFA), chorioretinal lesion had hypoflorescent pattern at the early stage and hyperflorescent pattern at the late stage; macula did not show any leakage.

In the control visit two weeks after the first one, visual acuity of the left eye was 0.9. Lesion size was smaller and vitreal inflammation was improved. In OCT examination, there was further reduction of retinal thickening at the site of the chorioretinal lesion, there was a small cystic appearance in the inner layers of retina, the irregularities in the retinal layers with decreased reflectance were still present and finally reflectance of the RPE-C junction was further increased (Figure 1C). In macular OCT examination, SMD was completely resolved (Figure 2C).

The administered treatment was tapered off and the patient was followed-up further. In the control visit two months later, visual acuities were complete in both eyes. OCT examination passing over the scar tissue of the chorioretinal lesion demonstrated significant reduction of retinal thickness, resorbtion of the cystic appearance in the inner layers of retina. Reflectance of the retinal layers decreased, reflectance of RPE-C junction became significant while localizing itself to the lesion site (Figure 1D). Macular OCT examination was within normal limits (Figure 2D).

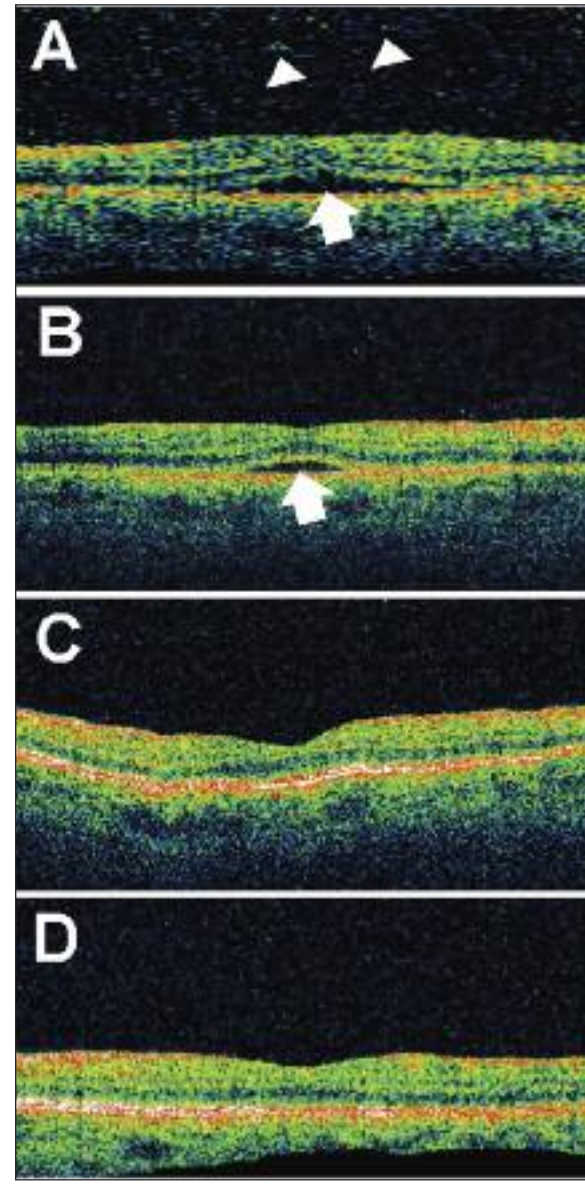

FIGURE 2: Macular optical coherence tomography sections covering fovea of the active ocular toxoplasmosis patient at the time of admission **(A)**, 2 weeks after **(B)**, 4 weeks after **(C)** and finally 12 weeks after treatment **(D)**. Inflammatory cells within the vitreous (arrow head) and serous macular detachment (arrow) were seen to have disappeared in time.

DISCUSSION

OT caused by *Toxoplasma gondii* typically heals with a chorioretinal atrophic scar.[1] Ensuing retinal damage can exhibit individual differences attributed to the pathogenicity of the agent and host-related inflammatory reactions.[2,5]

Although rare, in extramacular involvement of OT, macula can be secondarily affected.[1,2] This presents itself in the form of tractional maculopathy or diffuse macular edema and disease related SMD is a rare occurrence.[1] In a study covering 109 active OT patients, SMD has not been reported in any of these patients.[6]

Inflammation affecting the uvea can present with diffuse macular edema, cystoid macular edema or SMD type fluid accumulations.[7,8] However, we do not know which factors influence the appearance of these clinical states. Development of SMD as a result of subretinal fluid accumulation cannot be fully understood.

An early diagnosis is and important treatment must be started in time in SMD in order to prevent permanent visual losses and eliminate the need for unnecessary invasive treatment approaches. OCT

is a valuable diagnostic tool in the diagnosis of retinal diseases.[1,3,9] SMD was considered as the main causative factor in the impaired visual acuity of the case we presented, and this could successfully be identified with OCT.

There are few studies published in the literature reporting OCT findings of OT. In one of these studies, Guagnini et al. reported a female patient with recurrent OT. They identified atypical 100-150 micron size grayish spherical deposits on the macular vitreoretinal surface and in retinal vessels.[10] In another study, OCT section including the active OT lesion demonstrated partially detached posterior hyaloid membrane (PHM) and migration of the inflammatory cells to the vitreous.[3] One study reported detachment of PHM after thickening.[1] Similar vitreal and PHM findings were present in the case we presented.

In the OCT examination of our case, retinal layers at the site of active OT were found abnormally hyperreflective; Together with this finding, there was shadowing of the RPE-C junction. Four weeks after the administration of treatment, the thickness of the lesion site decreased, and a cystic appearance was observed in the inner retinal layers. Similar findings have been reported by Oréfice et al. and cystic changes were interpreted as vitreoschisis.[1]

OCT can reveal important information in the diagnosis and follow-up of vitreoretinal changes observed in patients with active ocular toxoplasmosis. SMD is a rare complication seen during the disease process, it can heal without any permanent structural problems following treatment of etiological factors.

In this study, our patient with OT had a rare complication of SMD and we presented the vitreoretinal morphological features observed during the follow-up of this case. These findings can contribute to the research conducted on disease related pathophysiological processes.

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