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Acute Central Retinal Artery Occlusion Associated with Intraocular Silicone Oil Tamponade

Göz içi Silikon Yağı Tamponatı ile İlişkili Akut Santral Retinal Arter Tıkanıklığı

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Summary

Many systemic and ocular factors may cause acute central retinal artery occlusion (CRAO). Herein, we aimed to describe a case of CRAO due to intraocular silicone oil (SO) tamponade. To the best of our knowledge, a case like our has not been reported previously. A 58-year-old male patient had undergone combined pars plana vitrectomy-lensectomy and intraocular SO for lens luxation and vitreus hemorrhage associated with a blunt ocular trauma in his right eye. Two weeks after the surgery, he presented with acute vision loss in the same eye. He was diagnosed with acute CRAO and it should be related with mechanical press or raised intraocular pressure (IOP) associated with SO. He was treated by partial removal of SO immediately. In spite of the regression of retina edema, his visual acuity did not improve due to optic atrophy. SO may cause CRAO due to raised IOP and/or its mechanical pressure and this complication must be kept in mind. *(Turk J Ophthalmol 2012; 42: 238-40)*

Key Words: Acute central retinal artery occlusion, silicone oil tamponade, pars plana vitrectomy, lensectomy

Özet

Pek çok sistemik ve oküler hastalık, akut santral retinal arter tıkanıklığına (SRAT) sebep olmaktadır. Çalışmamızda, daha önce benzer bir hastanın yayınlanmadığını düşündüğümüz, göz içi silikon yağı tamponatı ile ilişkili olarak gelişen SRAT olgusunu sunmayı amaçladık. 58 yaşındaki erkek olgunun sağ gözüne, künt göz travması sonrasında pars plana vitrektomi, lensektomi ve göz içine silikon yağı enjeksiyonu yapıldı. Cerrahiden iki hafta sonra aynı gözde akut görme kaybı gelişti. Olgumuzda, silikon yağının doğrudan basısı ya da yüksek göz içi basıncı (GİB) ile alakalı olduğu düşünülen, akut SRAT saptandı. Acil olarak, göz içinden silikon yağının bir kısmı çıkartıldı. Retinal ödem gerilemesine rağmen, hastanın görme keskinliğinde düzelme olmadı. Silikon yağının, doğrudan bası ve/veya yüksek GİB nedeniyle akut SRAT'na sebep olabileceği akılda tutulmalıdır. *(Turk J Ophthalmol 2012; 42: 238-40)*

Anahtar Kelimeler: Akut santral retinal arter tıkanıklığı, silikon yağı, pars plana vitrektomi, lensektomi

Introduction

Central retinal artery occlusion (CRAO) is one of the most important ocular diseases seen in the ophthalmology emergency departments. Generally, it has bad visual prognosis with an initial symptom of painless and sudden loss of vision in the affected eye.[1,2]

There are some risk factors for CRAO including systemic vascular diseases, hypercoagulable states, myeloproliferative disorders, cardiac valvular and collagen vascular diseases, endarteritis, glaucoma, and some drugs like oral contraceptives.[1,2] It may also occur after ocular and extra ocular surgeries related with anesthesia and long-acting intraocular gases.[3-9] Herein, we report a case of acute CRAO which developed two weeks after combined pars plana vitrectomy-lensectomy and intraocular silicone oil (SO) tamponade and, to the best of our knowledge, a case like ours has not been reported previously.

Case Report

A 58-year-old male patient, who had no any systemic or ocular diseases before, had undergone combined pars plana vitrectomy-lensectomy and intraocular SO for lens luxation into the vitreous body and vitreous hemorrhage associated with a blunt ocular trauma with firewood in his right eye. According to

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his medical records, a transconjunctival 23G three-port pars plana vitrectomy had been performed. After removal of the vitreous body and posterior hyaloid by the help of triamcinolone acetonid, the luxated lens was removed by phaco fragmatome after the injection of perfluorocarbon (decaline) liquid. The tear at 11 o'clock was treated by endolaser photocoagulation. Decaline was exchanged by air and the operation was finalized after the injection of 4 cc silicone oil (1000 cs). The patient was discharged from the hospital on the next day with topical prednisolone acetate and ofloxacine treatment and the visual acuity (VA) was 20/200 (with +11 D). The ophthalmological examination of the same eye revealed aphakia, clear vitreous, 20 mmHg of IOP and no retinal detachment.

Two weeks after the surgery, the patient presented with acute vision loss in the same eye. In ocular examination, the VA was hand motion. The slit lamp examination revealed clear cornea and the anterior chamber was filled with SO completely. The IOP was 50 mmHg (Goldmann applanation tonometer) and relative afferent pupillary defect was detected. Fundoscopy disclosed a pale, opaque fundus with a red fovea (cherry-red spot) and attenuation of the arteries (Figure 1). Gonioscopy showed grade 3 open angle according to Shaffer grading system. The left eye revealed normal findings with a VA of 20/20. The patient was diagnosed with CRAO, which was probably induced by mechanical press of SO itself or raised IOP. He was treated with partial removal of SO (1cc) by limbal incision and injection of air into the anterior chamber immediately.

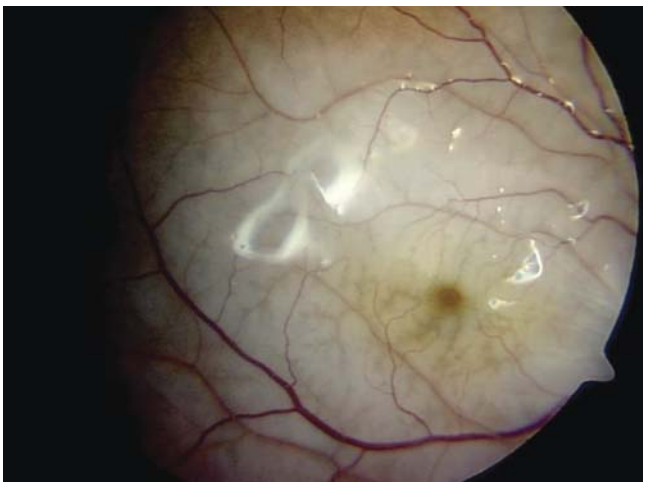

Figure 1. Color fundus photograph shows a pale, opaque fundus with a red fovea (cherry-red spot) and attenuation of the arteries

Figure 2. Color fundus photograph shows optic disk pale with nonedematous retinal appearance

Two weeks after CRAO, the VA was hand motion again and the IOP was 18 mmHg without any anti-glaucoma agent. Fundoscopy disclosed optic disc pallor with nonedematous retinal appearance (Figure 2). The patient was followed up for 3 months with the same findings and IOP≤18 mmHg. Informed consent was taken from our case.

Discussion

Pars plana vitrectomy (PPV) with intraocular gas tamponade is the main reason for CRAO related with ocular surgeries.[6-9] Sulfurhexafluoride (SF6) and perfluoropropane (C3F8) are the most commonly used gases. Bubbles can remain in the eye up to 70 days depending on the concentration, volume and type of the gas. Lee reported a case of acute vision loss due to CRAO 37 days after PPV and C3F8 injection when he underwent orthopedic surgery under nitrous oxide (NO), a highly soluble inhalational anesthetic agent, anesthesia.[6] In case of NO administration during gas injection in vitreo-retinal surgeries, the bubble begins to expand rapidly with the risk of retinal and optic nerve ischemia like in this case. Hart et al. reported their three CRAO cases similar with Lee's case, related with NO anesthesia, within few months after PPV and C3F8 injection.[7] In order to prevent these complications, the anesthesiologist must be aware of the presence of gas within the eye. High altitude is also a main risk factor for the cases with intraocular gas tamponade. As altitude increases, the surrounding atmospheric pressure exerted on the gas decreases, so the intraocular gas begins to expand. Fang et al. reported a case with CRAO during a mountain trip after PPV and C3F8 injection.[8] Also CRAO cases related with air travel after PPV-intraocular gas tamponade have been reported.[9]

Different from all these cases reported before, our patient had unusual association of acute CRAO with intraocular silicone tamponade at the second postoperative week. SO may cause some complications like secondary glaucoma and keratopathy by generating oil droplets due to the emulsification.[10] Raised IOP remains a significant complication of intraocular SO with reported incidences of between 6 and 40% of eyes and it occurs via different pathophysiologic mechanisms.[10] An early postoperative rise in IOP can be due to pupillary block, inflammation, pre-existing glaucoma, and/or final migration of SO into the anterior chamber with consequent mechanical impediment to filtration. Our case had also raised IOP in early

postoperative period. He had no history of glaucoma and clinical findings of inflammation or pupillary block with a patent inferior iridectomy. The migration of SO was thought to be the reason of raised IOP in our case. Acute CRAO should have been caused by both raised IOP and direct by mechanical pressure of SO because regression of retinal edema was obtained by immediate partial removal of SO. In the three-month follow-up period, IOP was measured between 15 and 18 mmHg without any anti-glaucoma treatment. Wolf et al. observed a complication of CRAO related with heavy SO in one of their 33 eyes of 33 cases treated with heavy SO. 11 But different from our case, CRAO developed after heavy SO removal in their case probably associated with surgical procedure.

In spite of the great benefits in repairing complicated retinal detachments, long-lasting retinal tamponade of SO have some frequent complications like cataract, glaucoma or keratopathy. Acute CRAO due to the acute raised IOP and direct by mechanical pressure of SO like in our case has not been reported previously, to the best of our knowledge. Our report emphasizes the importance of monitoring the IOP in all cases with SO tamponade in early and late postoperative period by keeping the risk of CRAO in mind.

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