

SIMULTANEOUS PRESENTATION OF BRANCH RETINAL ARTERY OCCLUSION AND VITREOMACULAR TRACTION

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Purpose: To report a case of simultaneous presentation of branch retinal artery occlusion and vitreomacular traction and the auxiliary role of optical coherence tomography and fluorescein angiogram in the management of this case.

Methods: A 42-year-old female patient presented with diminution of vision in the left eye. Visual acuity was 20/200. Ocular examination revealed the presence of whitening of the retina along the superotemporal arcade, suggestive of branch retinal artery occlusion. Fluorescein angiogram showed delayed filling of the superotemporal artery consistent with branch retinal artery occlusion along with uncharacteristic leakage at the fovea. Optical coherence tomographic scan through the fovea revealed vitreomacular traction with distortion of foveal contour. The patient was diagnosed as a case of branch retinal artery occlusion with vitreomacular traction. The patient underwent vitrectomy for the hyaloidal traction on the macula.

Results: Postoperatively, the visual acuity in the left eye improved to 20/20 with resolution of dye leakage on fluorescein angiogram with normal foveal contour on optical coherence tomography.

Conclusion: Branch retinal artery occlusion and vitreomacular traction can present simultaneously, and fluorescein angiogram with optical coherence tomography has a complementary role in the management of such cases.

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Branch retinal artery occlusion (BRAO) accounts for approximately 38% cases of acute retinal arterial obstruction.¹ Commonly described etiological causes for BRAO include emboli, intraluminal thrombosis, hemorrhage under an atherosclerotic plaque, vasculitis, spasm, and coagulopathies.² It may coexist with structural cardiac and carotid artery abnormalities. Conversely, vitreomacular traction (VMT) develops because of incomplete vitreous separation, wherein vitreous maintains an anomalous focal attachment to the retinal surface, leading to persistent traction on the macula.³ Vitreomacular

traction is closely associated with epiretinal membranes⁴ with increasing age (chance of developing posterior vitreous detachment increases with age), retinal vascular diseases, ocular inflammation, and the like.

In most cases, BRAO tends to involve temporal retinal vessels, presenting with acute, unilateral, painless loss of vision, and often associated with central or paracentral visual field defects. It is more common in men, typically in the seventh decade of life.⁵ In contrast, VMT syndrome has been reported more frequently in women, with reported age range from 26 years to 85 years, although most commonly seen in the sixth or seventh decades.⁶ The typical patient of VMT syndrome presents with some degree of visual loss associated with metamorphopsia.

Here, we report simultaneous presentation of BRAO and VMT in a 42-year-old female patient.

Case Report

This patient presented to us 2 days after sudden, painless, nonprogressive decrease of vision in the left eye. She had

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Fig. 1. Preoperative fundus photograph.

a noncontributory medical history. Examination showed best-corrected visual acuity of 20/20 and 20/200 in the right and left eyes, respectively. Intraocular pressures were 20 mmHg in each eye. There was no afferent pupillary defect. Slit-lamp biomicroscopy of the anterior segment was unremarkable in both eyes. Fundus examination by indirect ophthalmoscopy was normal for the right eye. The left eye had retinal whitening and pallor along the superotemporal arcade (Figure 1), suggestive of superotemporal BRAO. Furthermore, there was associated macular edema with subtle striae radiating from the fovea.

Fluorescein angiogram showed a relative delayed filling of the superotemporal artery (Figure 2), which was corroborative with our clinical diagnosis of BRAO. Atypically, the late phase revealed minimal intraretinal dye leakage on the fovea with disk hyperfluorescence (Figure 3). Optical coherence tomography (OCT, Stratus OCT; Carl Zeiss Meditec, Dublin, CA) vertical scan was passed from below upward through fovea. The hyperreflectivity in the inner layer as seen on the right side of the scan is consistent with the area corresponding to BRAO. Furthermore, there was conspicuous vitreomacular traction on the fovea causing significant central foveal elevation (Figure 4). This foveal distortion could explain the foveal striae and late-phase intraretinal leak.

On the basis of these findings, we made the diagnosis of BRAO with VMT in our patient. She was advised to undergo a systemic

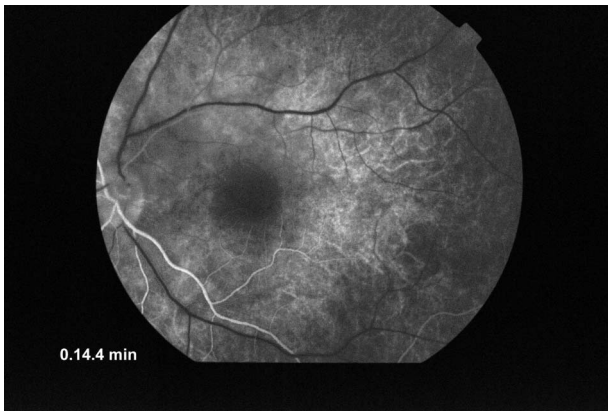


Fig. 2. Preoperative fluorescein angiogram showing delayed filling of superotemporal artery in the arterial phase (14 seconds).



Fig. 3. Preoperative fluorescein angiogram showing leakage of the dye in the macula in late phases, suggestive of macular edema with presence of disk hyperfluorescence (6.22 minutes).

workup to rule out hypertension and diabetes. Echocardiography, electrocardiogram, and carotid Doppler studies were requested. Extensive blood tests were performed to rule out coagulopathies. All the test results were within normal limits.

She was given vitrectomy with hyaloid removal. Sutureless surgery was performed using a 23-gauge system (ACCURUS surgical systems; Alcon Laboratories, Fort Worth, TX) uneventfully. One month after surgery, the patient had best-corrected visual acuity of 20/20 in the operated eye (Figure 5). Late phase of fluorescein angiogram showed clearing of macular edema (Figure 6). The foveal area had regained its normal contour on OCT examination (Figure 7), although it did show thinning in the area of the retina affected by arterial occlusion indicating the natural course of BRAO.

Discussion

Our patient presented with a history and clinical appearance consistent with BRAO, apart from atypical radiating striae seen around the fovea. Fluorescein angiogram revealed a delayed filling of the dye in the involved artery, once again affirming the occlusion. However, the late-phase leak in the foveal area was

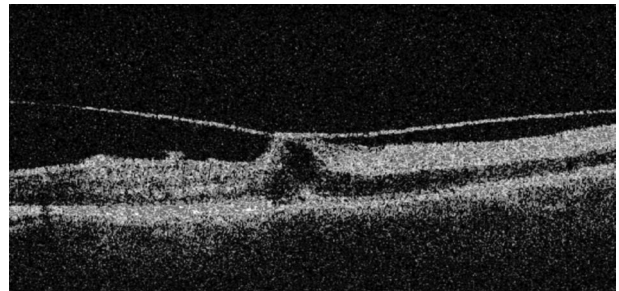


Fig. 4. Preoperative vertical optical coherence tomography scan demonstrating vitreomacular traction. Associated increased thickness of inner retinal layer corresponding to the BRAO also is seen



Fig. 5. Postoperative fundus photograph.

atypical. Ultimately, the OCT findings confirmed the BRAO along with distinct features of VMT. Following hyaloid removal, we noted restoration of the normal foveal contour both clinically and on OCT along with improvement of visual acuity to 20/20.

This case demonstrates the complementary roles of fluorescein angiogram and OCT as adjuncts to good clinical examination and the utility of OCT to bring out a clinical entity that was very subtle and could likely have been missed on observation. Conservative management as a case of BRAO may have led to permanent anatomical and functional damage of the fovea. However, because the OCT clearly demonstrated the traction of hyaloid on the fovea, early surgical intervention was planned. This resulted in remarkable improvement with normalization of foveal contour and restoration of vision. This case also highlights the coexistence of two diverse clinical conditions, namely BRAO and VMT, which, to the best of our knowledge, has not appeared in literature before.

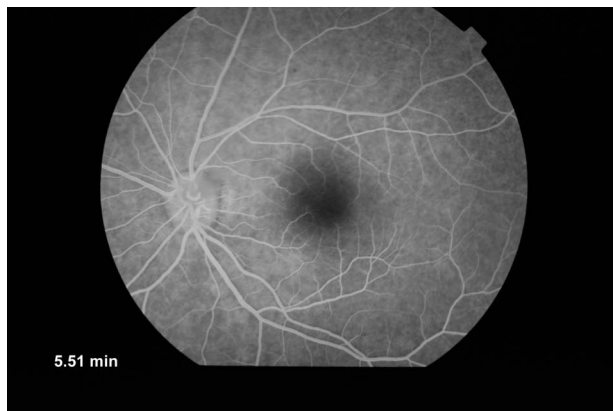


Fig. 6. Postoperative fluorescein angiogram showing no leakage at the fovea (5.51 minutes).

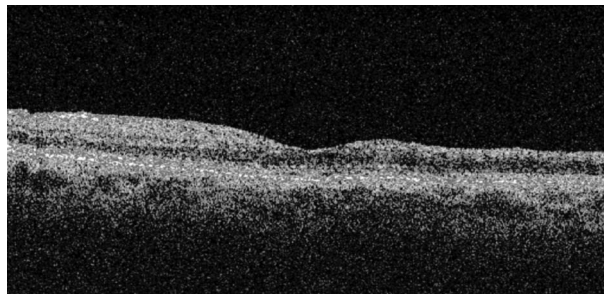


Fig. 7. Postoperative vertical OCT scan showing resolution of macular edema with restoration of normal foveal contour. Associated thinning of inner retinal layer corresponding to the natural course of BRAO also is seen.

Key words: branch retinal artery occlusion, fluorescein angiography, optical coherence tomography, vitreomacular traction.

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