

## Efficacy of hyperbaric oxygen therapy in a young woman with idiopathic branch retinal artery occlusion

Mehmet Demir, Orhan Kara, Atakhan Yıldız and Dilek Guven

### Abstract

(Demir M, Kara O, Yıldız A, Dilek G. Efficacy of hyperbaric oxygen therapy in a young woman with idiopathic branch retinal artery occlusion. *Diving and Hyperbaric Medicine*. 2013 September;43(3):164-165.)

We present a case of branch retinal artery occlusion (BRAO) in a healthy 20-year-old woman with no history of ocular or systemic diseases or drug use. She presented with a sudden decrease in visual acuity associated with a visual field defect of the right eye, which she had first noticed 4 hours earlier. Examination showed a BRAO with oedema at the upper part of the macula and surrounding area, and confirmed on fluorescein angiography. The left eye was normal. She was sent immediately for hyperbaric oxygen therapy (HBOT) and received 10 sessions (over 20 days) of 2 hours each at a pressure of 253 kPa. Follow up at four months showed a normal fundus, and visual acuity of 20/25. Visual field and fundoscopy were normal. Investigations for a cause of the BRAO proved negative. Retinal artery occlusion is rare in young people, and early application of HBOT in patients with RAO appears to improve outcome.

### Key words

Retinal artery occlusion, hyperbaric oxygen therapy, outcome, case reports

### Case report

A previously healthy, 20-year-old woman presented 4 hours following the development of unilateral (right-sided) loss of vision. At presentation, visual acuity (VA) in the right eye was 20/200 with an inferior quadrant visual field (VF) defect. Fundoscopy showed oedema at the upper part of the macula and retinal quadrant (Figure 1). Central macular thickness (CMT) was 256 µm and intraocular pressure (IOP) was 12 mm Hg in the affected eye. Fluorescein angiography revealed ischaemia and a non-perfused branch retinal artery (BRAO) (Figure 2). The left eye was normal. She had no past medical or surgical history and was on no medications. Her social history was negative for alcohol, tobacco or illicit drug use. A complete evaluation regarding the aetiology of the BRAO was deferred so that HBOT could begin immediately. The patient commenced hyperbaric oxygen therapy (HBOT) within 5 hours of noting visual loss. She received 10 HBOT of 2 hours' duration each at a pressure of 253 kPa over 20 days.

Two weeks following HBOT, VA was 20/100 and CMT was 234 µm. Four months following therapy, VA was 20/25, CMT 208 µm and IOP 16 mmHg. The right fundus appeared normal (Figure 3) and angiography revealed a patent branch artery (Figure 4). Subsequent investigation into the aetiology of the patient's BRAO did not reveal a specific cause.

### Discussion

Retinal artery occlusion (RAO) causes irreversible visual loss in all but 1–8% of patients.<sup>1,2</sup> HBOT has been found to be a safe and effective treatment for patients with RAO.<sup>3</sup> RAO is mostly seen in the elderly, with an estimated 0.85 per 10,000 patients over the age of 40 years affected.<sup>4</sup> RAO is rare in

young people. The most common causes of RAO include hypertension, hyperlipidemia, hyperhomocysteinaemia, cardiac abnormalities, cardiac tumours, vasculitis, uveitis and infections.<sup>5–7</sup> Complications of RAO include optic atrophy, blindness, neovascular glaucoma and retinal atrophy. Although in this case no identifiable aetiology for her BRAO was identified, thorough investigation should always be attempted in cases of RAO.

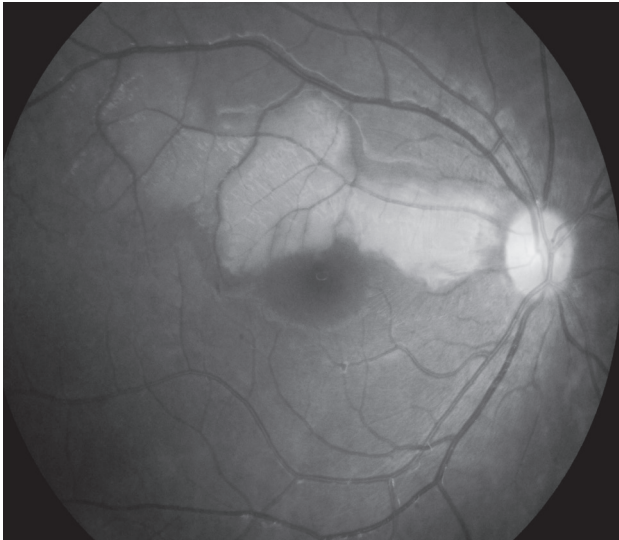
Evidence for the efficacy of HBOT for RAO was reviewed in detail recently, suggesting a substantially improved rate of visual recovery with early HBOT compared to treatment without HBOT.<sup>2</sup> Based on this evidence, early HBOT therapy in patients with BRAO of no known aetiology may be a good therapeutic option, providing a favourable outcome with recovery of visual acuity, visual field defects and recovery of the retinal signs.

### References

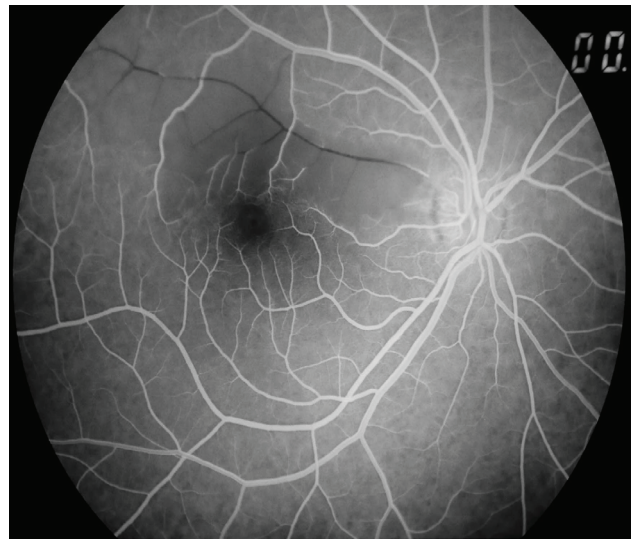
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**Figure 1**

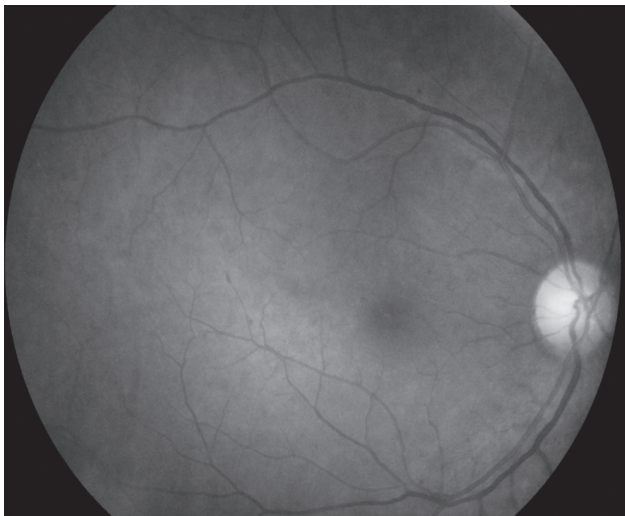
Right fundus image showing retinal and macular oedema

**Figure 2**

Fluorescein angiography showed ischaemic area and non-perfused right branch retinal artery

**Figure 3**

Normal right retinal fundus at four-month follow up

**Figure 4**

Fluorescein angiography showing re-canalised branch retinal artery



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Mehmet Demir, Orhan Kara, Atakhan Yildiz and Dilek Guven  
 Department of Ophthalmology, Sisli Etfal Training and Research  
 Hospital, Istanbul, Turkey.

**Address for correspondence:**

Dr Mehmet Demir

Department of Ophthalmology, Sisli Etfal Training and Research  
Hospital

Istanbul, Turkey

**Phone:** +90-(0)212-231-2209**Fax:** +90-(0)212-224-0772**E-mail:** <drmehmetfe@hotmail.com>