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Branch Retinal Artery Occlusion Associated with Secondary Hyperhomocysteinemia

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Abstract **Case Report**

We describe branch retinal artery occlusion in a 47-year-old man with secondary hyperhomocysteinemia. He was a habitual smoker and drinker with no history of hypertension or hyperlipidemia. Thorough systemic investigations revealed elevated serum homocysteine levels. We instructed the patient to consume a balanced diet and prescribed him oral pyridoxine. In order to prevent potentially fatal thromboembolic and atherosclerotic events in the future, it is important to always consider the measurement of plasma homocysteine levels while treating young patients with ocular vascular diseases.

Keywords: Branch retinal artery occlusion, hyperhomocysteinemia.

INTRODUCTION

Elevated homocysteine is an independent risk factor for retinal vascular occlusive disease [1-6]. There are few reports have focused on patients with branch retinal artery occlusion (BRAO) [7]. We describe BRAO in a 47-year-old man with hyperhomocysteinemia.

CASE REPORT

A 47-year-old man presented with sudden-onset upper visual field loss in his right eye. He was a habitual smoker and drinker with no history of hypertension or hyperlipidemia. Clinical examination revealed a visual acuity of 20/200 and presence of retinal whitening along the inferotemporal arcade including the fovea in the right eye (Figure 1A). Fluorescein angiography confirmed occlusion of the inferotemporal retinal artery along with nonperfusion areas (Figure 1B). A diagnosis of BRAO was made.

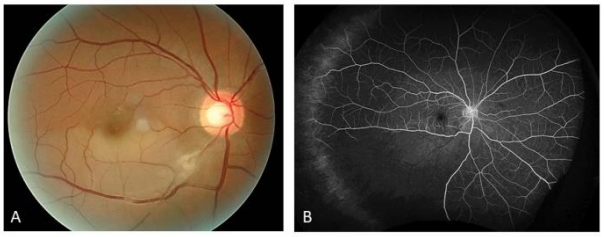

Fig-1: Fundus photograph (A) and fluorescein angiography (B) of the right eye Note occlusion of the inferotemporal retinal artery

Thorough systemic investigations revealed elevated serum homocysteine levels (68.5 nmol/mL; reference range: 3.7-13.5 nmol/mL). As vitamins B6, B12, and folate serve as cofactors in the enzymatic pathways of homocysteine metabolism, we instructed the patient to consume a balanced diet and prescribed him oral pyridoxine.

DISCUSSION

Elevated homocysteine is an independent risk factor for retinal vascular occlusive disease [1-6]. Vine [2] described that hyperhomocysteinemia is a risk factor for central retinal vein occlusion (CRVO). Pianka *et al.* [3] evaluated the prevalence of hyperhomocystinemia among patients with nonarteritic anterior ischemic optic neuropathy (NAION), central retinal artery occlusion (CRAO), or CRVO. According to their report, eighteen of 40 patients (45%) with NAION and eight of 13 patients (61.5%) with CRAO had hyperhomocystinemia

compared with three of 21 (14.3%) in the CRVO group and eight (9.8%) in the control group.

BRAO in a young individual is an extremely rare entity and occurs in clinical settings of cardiac valvular disease, vasculitis, hypercoagulable states, and oral contraceptives [7]. Hence, thorough systemic evaluation is warranted. In this present patient, he was a habitual heavy smoker and drinker and he hated vegetables and had a biased diet. De Bree *et al*. [8] examined plasma homocysteine concentration in 2,435 men and women aged 20–65 y from a population-based Dutch cohort. According to their report, mean homocysteine concentrations (adjusted for intakes of riboflavin, vitamin B-6, vitamin B-12, and methionine and for age, smoking, and alcohol consumption) in men with low and high folate intakes were 15.4 and 13.2 mol/L, respectively; in women, homocysteine concentrations were 13.7 and 12.4 mol/L, respectively. In addition, the difference in the mean homocysteine concentration between men with low and high folate intakes was greater in smokers than in nonsmokers and greater in nondrinkers than in drinkers. In women, the association between folate intake and homocysteine was not modified by smoking or alcohol consumption.

CONCLUSION

Although our findings were based on a single case, in order to prevent potentially fatal thromboembolic and atherosclerotic events in the future, it is important to always consider the measurement of plasma homocysteine levels while treating young patients with ocular vascular diseases.

Disclosure

The authors have no conflicts of interest to disclose.

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