Transient Vertical Monocular Hemianopsia with Anomalous Retinal Artery Branching

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SUMMARY A 62-year-old man reported 6 stereotyped attacks of transient loss of vision in the lateral visual field of the right eye and was subsequently found to have right internal carotid artery occlusion. Fundoscopy revealed an anomalous central retinal artery branching whereby a single stem vessel supplied the superior and inferior nasal quadrants of the retina. Circulatory insufficiency in this anomalous stem could explain the occurrence of vertical monocular hemianopsia as an unusual manifestation of ipsilateral carotid artery atherosclerosis.

Transient monocular blindness as an indicator of ipsilateral internal carotid artery atheroma was first emphasized by Fisher. When the transient blindness is not total, a horizontal hemianopsia or a quadrantanopsia is most often reported by the patient. This is consistent with the usual pattern of arterial supply to the retina whereby a single superior and inferior branch of the central retinal artery supplies a territory above and below the optic disc.

This patient presents an instance of vertical monocular hemianopsia that may have been due to an appropriate retinal vascular anomaly. In such a patient, description of a vertical monocular hemianopsia might be interpreted by the physician to represent a misreporting of a homonymous hemianopsia.

Report of the Patient

With no previous history of retinal or cerebral vascular disease, a 61-year-old hypertensive man described 2 spells per day for 3 consecutive days of loss of vision in the temporal half visual field of the right eye lasting about one minute each time. He had been careful to cover each eye separately and was quite certain the field loss was as reported. Hospitalization was advised but he put this off for 11 months. During this time there were no transient or permanent retinal or cerebral attacks. Examination of the right ocular fundus (fig.) showed an anomalous retinal arteriolar pattern whereby a single common stem bifurcated (arrow) to supply the superior and inferior nasal quadrants. The temporal quadrants were supplied in the usual fashion and the vascular pattern material was noted. Transfemoral angiography showed total occlusion of the right internal carotid artery just distal to its origin. Blunting of the stump suggested an old occlusion.

Discussion

Transient monocular vertical hemianopsia has been described only rarely and an adequate explanation for it has not been provided. Permanent monocular vertical hemianopsia has been reported as an uncommon result of emboli to the superior and inferior retinal artery branches on the same side of the retina. The basic anatomical pattern of division of the central retinal artery into a superior and inferior retinal artery is only rarely anomalous and global, altitudinal or quadrantic field loss is to be expected. There is variation as to where, in relation to the optic disc, the division into a superior and inferior retinal artery branch occurs. Single instances have been reported in asymptomatic individuals where one central retinal artery branch divides to supply the superior and inferior nasal or temporal half of the retina. The only large-scale search for such anatomical variations was undertaken by Awan who found, on examining the eyes of 2100 people, that the temporal half-retina was supplied by a single branching artery in 19 eyes and the nasal half-retina

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Figure Photograph of right ocular fundus (courtesy V. Hagopian, M.D.). A central retinal artery stem divides in the disc (arrow) to supply branches to the superior and inferior nasal retinal quadrants.

from a single branching artery in 5 eyes. He predicted the potential for "paradoxical field defects" in such patients, as had Bonamour, but neither author had encountered such a patient.

The stem artery supplying the nasal half of the retina in the present patient appears to be a major anomalous branch of the central retinal artery, although it is conceivable that it is a cilio-retinal artery. Even if that were the case, cilio-retinal arteries also originate from the ophthalmic artery and, therefore, the significance of this patient to the question of internal carotid artery disease is not altered.

Although ipsilateral internal carotid artery disease is not the only cause of retinal artery embolization, all patients with retinal ischemia must be considered likely to have a source in the cervical carotid system.

The chief importance of the present patient is to highlight the fact that transient monocular vertical hemianopsia may be reported by patients with retinal disease and that anomalous division of retinal arterioles should be sought in patients with such complaints. It is a mistake automatically to assume that such a patient is incorrectly reporting a homonymous hemianopsia.

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References
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