INTRODUCTION

Branch retinal artery occlusions have a strong association with concurrent cardiovascular disease as well as an increased risk for concurrent and subsequent cerebrovascular ischemic events. This case involves a patient with BRAO requiring carotid endarterectomy (CEA).

CASE HISTORY

- 70-year-old white male
- Chief Complaint: black spot in upper right quadrant of OS for two weeks with no changes
- Medical History: Hypertension, Aneurysm of thoracic aorta, A-Flb s/p ablation, Abdominal aortic aneurysm, Obstructive sleep apnea, Hyperlipidemia
- Ocular History: Early POAG OD, nuclear cataract, lattice degeneration w/o holes OS
- Medications: Latanoprost, Atorvastatin, Gabapentin, Lisinopril, Metoprolol, Pramipexole
- Allergies: NKA

PERTINENT FINDINGS

- BCVA OD: 20/20, OS: 20/30
- DFE: OD: unremarkable, OS: embolus in the inferior temporal arcade with retinal ischemia
- OCT: 
  - Macro OD: within normal limits, OS: inferior retinal thinning
  - RNFL OD: inferior thinning, OS: no glaucomatous thinning
- Visual Field: HVF 24-2-OD: stable partial superior arcuate, OS: superior nasal quadrantanopia
- Labs: CBC and BMP reassuring
- Carotid Doppler: flow velocity indicates <50% stenosis of the right and >70% stenosis of the left; bilateral heterogeneous/irregular atherosclerotic plaque.
- CTA: Caltic plaque in bilateral internal carotid arteries causing stenosis <55% of the right and >70% (possibly up to 90-95%) of the left.

DIFFERENTIAL DIAGNOSIS

- CRAO: obstruction in the central artery leading to retinal ischemia of the entire retina/loss of all vision.
- Retinal Vasculitis: inflammation of the branch retinal artery that typically occurs with an ocular or systemic disease and can be associated with retinal ischemia.
- Commotio Retinae: retinal whitening from damage to the outer retinal layer caused by the shockwaves of blunt trauma to the globe.
- Cilioretinal artery occlusion: retinal whitening extending through posterior pole leading to a central visual field defect.
- Myelinated nerve fiber layer: white demarcated patches with feathery border caused by the myelinization of RNFL.

Figure 1. Fundus photograph of the left eye with inferior temporal embolus and retinal ischemia at initial visit.

DIAGNOSIS AND DISCUSSION

- BRAO: decrease of arterial blood flow due to an embolus in the branch artery leading to a focal retinal ischemia and partial visual field defect.
- Prognosis of vision is 20/40 or better in 74% of patient with permanent BRAO and in 94% of patient with transient BRAO.3
- RAO is highly associated with an embolus from the internal carotid artery. Also, RAO patients with etiology of large artery (which includes carotid artery) atherosclerosis are at higher risk for vascular events in 1 year.4
- Population studies showed patients with retinal stroke have higher risk of subsequent vascular and/or cerebral ischemic events that needed urgent treating.5
- New guidelines for management of RAO patients.
  - Emergent stroke evaluation recommended for patients presenting with acute onset of visual symptoms within the first 72 hours because they are at highest risk for subsequent stroke.6
  - Occurrences of silent stroke found in patients with RAO through DWI-MRI. Approximately 25% of RAO patients have acute cerebral ischemia.7

CONCLUSION

- Eye care professionals are the frontline providers for diagnosing an acute onset of retinal ischemia and making timely referral for stroke evaluation. This is of particular importance for those presenting with visual symptoms in the past 72 hours. Multidisciplinary management among eye care providers, neurologists, and vascular specialists are important for timely treatment and possibly saving lives.

BIBLIOGRAPHY