Branch Retinal Artery Occlusion After Coil Embolization of a Paraclinoid Aneurysm

Netan Choudhry, MD; Alexander J. Brucker, MD

ABSTRACT: The authors report a case of a 48-year-old woman with a branch retinal artery occlusion after the neurosurgical coiling of a paraclinoid aneurysm. Clinical examination revealed a Hollenhorst plaque at the bifurcation of the inferior arcade and at a branch of the superior arcade with associated retinal whitening in the right eye. Follow-up examination at 8 months demonstrated improved visual acuity with near complete resolution of the retinal infarction but a persistent inferior Hollenhorst plaque. This case illustrates a retinal artery occlusion as a possible complication of paraclinoid aneurysmal coiling procedure.


INTRODUCTION

Retinal artery occlusions may result from a variety of etiologies. These occlusions may involve the central retinal artery or its branches. The embolic source may originate from calcific plaques in valvular heart disease, cholesterol emboli from carotid arterial disease, or embolization of local thrombi. We report a case of branch retinal artery occlusion secondary to embolization following neurosurgical coiling of a paraclinoid aneurysm.

CASE REPORT

A 48-year-old African-American woman with a medical history significant for a right paraclinoid aneurysm underwent endovascular stent placement in July 2007 (Figure 1A). During this procedure, coil embolization was also attempted but failed because the coil continued to prolapse out of the parent vessel. Several hours after the procedure, the patient noted a “darkening” of her vision in the right eye. Best corrected visual acuity (BCVA) was hand motion in the right eye and 20/20 in the left eye with no relative afferent papillary defect. Her right fundus revealed a Hollenhorst plaque at the bifurcation of the branch retinal artery of the inferior arcade and superior arcade with associated retinal whitening. A second Hollenhorst plaque was also present downstream in the same vessel within the inferior arcade with multiple peripapillary cotton-wool spots (Figure 1B). One month later, BCVA was 20/400 in the right eye and 20/20 in the left eye, with resolving retinal whitening in the region supplied by the occluded vessels. Goldmann visual field testing confirmed the presence of three adjacent central scotomas in her right eye. Optical coherence tomography revealed retinal thinning greatest superiorly and temporally, where the ischemic insult occurred (Figure 1C). Eight months after the initial embolic branch retinal artery occlusion, BCVA was 20/20 in the right eye and 20/20 in the left eye. The occluded vessels were now perfused despite a persistent Hollenhorst plaque at the inferior arcade (Figure 1D).

DISCUSSION

Paraclinoid or ophthalmic segment aneurysms arise from the internal carotid artery between the roof of the cavernous sinus and the origin of the posterior communicating artery. These aneurysms represent 5% of all intracranial aneurysms. Cerebrovascular ischemia...
from embolism is a known and reported complication of endovascular coiling for intracranial aneurysms. In one of the largest studies of coil embolization of intracranial aneurysms, Vinuela et al reported a 2.5% incidence of cerebrovascular ischemia from embolism. In the case described here, it is believed that the microemboli that caused the branch retinal artery occlusion arose from a thrombus that may have formed within the walls of the aneurysm or at the site of the stent itself. Furthermore, the resultant central scotomas and retinal thinning are consistent with retinal artery occlusion. Vision loss following intracranial coiling procedures has been described, secondary to microemboli and ischemia from vasospasm.

Retinal artery occlusions can be visually devastating; however, as perfusion returns, as in this case, partial or complete visual acuity improvement is pos-
sible. Retinal artery occlusions therefore are an important complication of intracranial aneurysm coiling procedures; ophthalmologists and interventional radiologists should be aware of and be certain to educate patients about this complication.

REFERENCES


