Hollenhorst Plaques

These may be just the tip of the iceberg.

BY CHARLES C. WYKOFF, MD, PHD; AND DANIEL E. CROFT, BA

“The good physician treats the disease; the great physician treats the patient who has the disease.”
– William Osler, MD, one of the Founding Professors of Johns Hopkins Hospital

As retina specialists, we have the privilege of caring for patients with blinding diseases every day. Many of these patients have isolated retinal pathologies such as age-related macular degeneration or rhegmatogenous retinal detachment. Many of our patients, however, are affected by retinal pathologies that are merely a manifestation of a systemic disease, such as diabetic retinopathy. Indeed, because of the high metabolic demand of the retina and because the retinal and choroidal circulations receive proportionally higher blood flow volumes per unit area than many other tissues, these vascular beds are often affected by systemic diseases earlier than other parts of the body.

CASE PRESENTATION AND RESULTS

An asymptomatic 55-year-old man with 20/20 visual acuity in both eyes was referred after presenting with a Hollenhorst plaque in the left eye during a routine ophthalmic examination. Fluorescein angiography (FA) revealed significantly delayed vascular filling in his left eye (Figure 1) with normal filling in his right eye. Following a discussion of management options, the patient chose to be evaluated immediately in a local emergency room. There, the patient was found to have >90% proximal, left internal carotid artery narrowing (Figure 2). The patient underwent urgent vascular surgery with left internal carotid endarterectomy (CEA) and implantation of a xenograft patch. The patient recovered rapidly and has remained asymptomatic. Four months following CEA, FA revealed significantly normalized vascular filling of his left retinal circulation (Figure 3).

DISCUSSION

Hollenhorst plaques were first described in 1961 by Robert Hollenhorst, MD, who aptly inferred their intraarterial location as indicative of embolic disease, classically

Figure 1. Fundus photograph left eye: Hollenhorst plaque (arrow) involving the inferior major retinal arteriole within the optic nerve head (A). Fluorescein angiograph showing delayed vascular filling of the retinal circulation (1 minute 51 seconds; B).
related to carotid arterial disease.1,2

Does the presence of a Hollenhorst plaque, whether symptomatic or asymptomatic, necessitate emergent evaluation for an embolic source? Certainly the answer depends on the specific circumstances of each patient.

In the case of a symptomatic Hollenhorst plaque, urgent embolic evaluation including carotid ultrasound analysis is probably indicated, as approximately 25% may have substantial carotid artery stenosis.3 In patients with moderate to severe carotid artery stenosis, CEA can substantially reduce the risk of subsequent hemispheric cerebral vascular accident (CVA). For example, in the North American Symptomatic Carotid Endarterectomy Trial (NASCET), patients with transient monocular visual loss (TMVL), transient ischemic attack (TIA), or nondisabling stroke and severe carotid stenosis (70% to 99%) were randomized to CEA or medical management; CEA led to a 2-year ipsilateral stroke rate of 9% vs 26% for patients undergoing medical management alone (P = .001).4

Approximately 75% of Hollenhorst plaques seen in ophthalmic practice are asymptomatic.5 Many studies have considered the relationship between asymptomatic
plaques and the presence of significant carotid artery stenosis; significant ipsilateral carotid stenosis can be identified in 5.6% to 9% of such patients.3,5,6 According to a meta-analysis of 3 randomized controlled trials involving 5223 patients with asymptomatic moderate to severe stenosis, intervention with CEA may be indicated if the perioperative risk is low, as risk of subsequent stroke or mortality can be reduced substantially (relative risk = 0.69, favoring CEA).7

In the presence of a Hollenhorst plaque, one may consider auscultation of the ipsilateral carotid artery with a stethoscope. The presence of a carotid bruit may signify a higher risk of significant carotid artery stenosis and may help predict CVA, myocardial infarction, and death.3,8 Although some studies have identified value in prognostication, others have suggested that the results of carotid artery auscultation have neither high specificity nor sensitivity, particularly in asymptomatic patients.9

Evidence suggests that both symptomatic and asymptomatic Hollenhorst plaques may be markers for significant carotid artery disease, and their presence indicates risk factor analysis and carotid ultrasonography. If a patient chooses to defer evaluation until a later time, one may consider documenting that urgent referral was offered. Just as the tip of an iceberg is only a small part of the whole underneath the ocean’s surface, a Hollenhorst plaque may be but a marker for a more serious systemic situation. ■

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