Title: Asymptomatic Hollenhorst plaques: Is carotid ultrasound necessary?

Authors:  
Trang Prosak OD, MS  
Stacia Yaniglos OD, FAAO

Abstract: Severe stenosis (95%) of the right internal carotid artery (ICA) is found in a patient with asymptomatic Hollenhorst plaque (HHP) OD, supporting the utility of carotid ultrasound in all patients with HHPs irrespective of symptoms.

I. Case History  
- 66 year old African American male presented for a routine eye exam.  
- Stable vision OU. No amaurosis fugax/TIAs symptoms.  
- Ocular history:  
  - Asymptomatic HHP OD 3 years ago. Carotid ultrasound at that time revealed no significant carotid plaque or stenosis on either side.  
  - Mild non-proliferative diabetic retinopathy OU  
  - Mild cataracts OD  
- Medical history: Type 2 diabetes, hypertension, coronary artery disease, dyslipidemia  
- Medications: metformin, nitroglycerin, amlodipine, atorvastatin, fosinopril, metoprolol, aspirin

II. Pertinent findings  
- Clinical: yellow, refractile embolus at the site of arterial bifurcation on the superior-temporal arcade OD  
- Imaging:  
  - Carotid ultrasound: 79% stenosis (severe) of right ICA  
  - Computed tomography angiography: 90-95% stenosis of right ICA

III. Differential diagnosis  
- Primary: Cholesterol embolus/HHP OD  
- Secondary  
  - Calcific embolus  
  - Fibrinoplatelet embolus

IV. Diagnosis and discussion  
- Diagnosis: HHP OD  
  - Bright yellow cholesterol emboli deposited within retinal arterioles, often at the site of vessel bifurcation.  
  - Originate from atheromatous lesions in the ipsilateral carotid artery or aorta  
  - Can be visually asymptomatic if they do not significantly obstruct the retinal arteriole  
- There is an ongoing debate within the literature regarding the necessity of carotid ultrasound in patients with asymptomatic HHPs.
A study by Bull et al. (1992) in a sample of 23 asymptomatic HHPs concluded that the presence of HHPs appears not to have a significant association with carotid disease and may not require routine screening by carotid duplex.\(^1\)

A retrospective study by Wakefield et al. (2003) in a sample of 98 patients, 18 of which had asymptomatic HHPs, concluded that HHPs are a poor predictor of significant carotid stenosis.\(^2\) The study further suggested that if initial carotid duplex result is normal, patients do not need to return for further examinations and follow-up carotid imaging is not required.

Another retrospective study by Bakri et al. (2013) in a sample of 237 patients with both symptomatic and asymptomatic HHPs came up with a drastically different outcome.\(^3\) The study found that there was no statistically significant difference in the proportion of patients with carotid stenosis >40% between symptomatic and asymptomatic patients. The study concluded that HHPs are a marker of significant carotid disease irrespective of retinal symptoms.

This case presents an instance where carotid ultrasound proved to be a critical screening tool leading to the diagnosis of severe carotid disease even when the patient presented with no visual or systemic symptoms.

V. Treatment, management

- 6 month follow-up in the Eye Clinic.
- Vascular Surgery: plan for right carotid endarterectomy (CE)
  - Before the surgery could be done, patient suffered a non-ST segment elevation myocardial infarction (NSTEMI) with associated left cerebellar hemorrhagic stroke.
  - Right CE delayed until condition stabilizes.
- Recommended treatment of carotid artery stenosis\(^4,\,5\)
  - Non-surgical interventions: recommended promptly for all patients
    - Antiplatelet therapy: usually aspirin. Clopidogrel and dipyridamole may be added.
    - Lipid-lowering therapy: statin preferred
    - Antihypertensive therapy
    - Life-style changing: smoking cessations, regular exercise, a diet low in saturated fat
  - Surgical interventions:
    - Strongly considered for symptomatic patients with 70-99% stenosis
    - Recommended only in selected asymptomatic patients (stenosis >85%, progressive stenosis, a history of contralateral symptomatic stenosis)

VI. Conclusion

- This case supports the use of carotid ultrasound as a screening test in all patients with HHPs irrespective of symptoms.
- Follow patient closely regardless of initial carotid ultrasound’s results and repeat imaging when new HHPs appear.
- Always include in patient education:
  - Life style changes
  - Warnings about stroke symptoms
REFERENCES