Letters To The Editor

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Timing and Frequency of Carotid Evaluation

To the Editor:

Despite Dr. Ackerman's excellent review of non-invasive carotid evaluation, (Stroke 11: 675-8, Nov.-Dec. 1980) a number of questions have remained unresolved. One area that we are particularly concerned about is the timing and frequency of non-invasive follow-up of patients with asymptomatic carotid bruits and what constitutes sufficient progression to justify a recommendation to proceed to arteriography in the continued absence of symptoms.

We have recently reviewed 100 consecutive patients with repeat carotid evaluations in our laboratory. Twenty-eight of these were performed on patients with totally asymptomatic carotid bruits. Our tests include 1) ocular pneumoplethysmography (OPG), 2) bidirectional Doppler and 3) visual analysis of recorded carotid bruits. We defined significant progression as 1), the development of a >4 torr difference between right and left ophthalmic artery systolic pressures, a >4 torr increase in such difference, or the development of "abnormal" ophthalmic systolic pressures relative to systemic systolic pressure as described by Gee.* 2) The demonstration of retrograde as opposed to antegrade flow in either frontal or supraorbital arteries. 3) The development of new bruits. Improvement was defined as the reverse of these changes.

Of these 28 patients (12 male, 16 female; mean age: 66 yrs.), 14 had repeat evaluations within 8 months of their initial tests, (group 1) while 13 had repeat evaluations between 9 and 16 months after the initial visit (group 2) and 5 provided data with an interval of greater than 16 months between evaluations (group 3). Four individuals belong to 2 groups. The percent in each group showing "progression", was 21, 23, 20 respectively while improvement was seen in 7, 18, and 40 respectively. No one characteristic in terms of age, sex, smoking, treated hypertension or diabetes were associated with progression status except that the 4 who "improved" tended to be younger (mean age: 57 yrs). One member of group 1 showed both progression in one test (bruit analysis) and an improvement in another (OPG).

Clearly the numbers involved in our study are too small to provide any definitive answers, though our data would suggest that progression can be both frequent and rapid. May we, through your columns, therefore, seek data from others with greater experience to clearly answer these 2 questions crucial to the role of non-invasive carotid evaluation of asymptomatic carotid bruits? 1) what non-invasive test finding(s) constitute progression? and 2) when and how frequently to test for such progression?

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The Author Replies:

Drs. Orchard and Wolfson raise very important questions. For the Current Concepts communication the number of cited articles had to be limited, but the two that were listed contain extensive references. As noted in the literature, we understand little of the natural history of carotid occlusive disease, which makes it difficult for one to act upon non-invasive results that show significant carotid bifurcation disease in patients with asymptomatic bruits and to know how to follow such patients.

The non-invasive tests give us an opportunity to learn more about the pathoanatomic and pathophysiological progression in patients with advanced but non-hemodynamically significant lesions. In our own laboratory we have identified patients with such lesions who have developed severe hemodynamic change in 1-2 weeks, and we have found others with very severe disease who have shown no progression over years. Thus, our data suggest that both slow and fast progressors occur in the non-invasive population. Typically, however, it seems that if a lesion is in a progressive phase it will advance at a rate that one can detect if he examines the patient once every 4 months. Our current empirical approach is to examine such patients quarterly; if the disease has not progressed over 8-12 months we follow them less frequently.

Because some lesions do progress rapidly but current non-invasive methodologies provide no predictive features we recommend that patients with at least moderate disease seen on B-mode scan be restudied no more than once a week prior to major surgery. We recommend that surgical candidates at risk for intraoperative hypertension have arteriography (and endarterectomy) if the non-invasive tests show any evidence of distal hemodynamic change. On the other hand, if an asymptomatic patient has evidence of early hemodynamic change on an elective non-invasive evaluation we suggest that be followed for evidence of progression and possibly treated in the interim with an antplatelet agent. Many tests, including OPG, can be used to identify progression of disease. The tests on which one puts weight must vary from lab to lab, depending upon the battery each uses and the relative expertise a lab develops with the individual components of the evaluation. We find that in our hands when the periorbital Doppler shows that collateral flow has evolved from supplying only the supraorbital to supplying both the supraorbital and supratrochlear vessels, we have sensitive and specific evidence of progression. The supratrochlear may be considered the artery of stenosis and the supratrochlear the artery of virtual or complete occlusion of the internal carotid.* When we find evidence of the latter pattern we recommend consideration of arteriography and subsequent endarterectomy if there are no contraindications.

Such recommendations are based on our incomplete knowledge of the natural history of carotid occlusive disease. Hopefully, the longitudinal information obtained from the many non-invasive laboratories will provide in the future a more rational basis for such management decisions.

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