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INVITED COMMENTARY

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One of the most enduring Holy Grails in carotid practice is the search for a *preoperative* biomarker or imaging parameter that accurately identifies the "high-risk for stroke" patient amongst a myriad of "lower-risk" patients attending cerebrovascular clinics. Unfortunately, every attempt has (thus far) failed, and it is inevitable that some observers will retain an interested but sceptical wariness regarding the suggestion by Altaf et al that magnetic resonance detection of intraplaque hemorrhage (MR-IPH) might optimize selection for carotid endarterectomy (CEA) or carotid artery angioplasty and stenting (CAS).

At first sight, the omens seem promising. The Altaf et al data suggest that MR-IPH in symptomatic patients with mild/moderate disease predicted an increased risk of recurrent ipsilateral events during a median 28 months' follow-up. These data are consistent with earlier observations that MR-IPH correlated positively with recurrent ipsilateral events in symptomatic patients with 70% to 99% stenoses awaiting CEA[1] and an increased rate of particulate embolization detected during CEA.[2]

So why do I retain doubts? I genuinely want this type of research to succeed, as too many CEA/CAS procedures are performed in otherwise very low-risk patients: seven of 10 symptomatic and nine of 10 asymptomatic interventions are (with hindsight) unnecessary. However, I keep returning to the anomaly in this paper, which was also present in an earlier study by Atlaf et al in patients with severe carotid disease.[1] Why is it that MR-IPH was only predictive of recurrent events in the ipsilateral *symptomatic* artery and not in the contralateral *asymptomatic* artery? In this study, 58% of contralateral asymptomatic carotid arteries had MR-IPH, yet none of these patients had a stroke during 28 months of follow-up. The authors acknowledged this discrepancy, but did not offer an explanation other than noting that coassociation with symptoms was important. Is it possible that some of the "high signal" in these symptomatic patients represented fresh luminal thrombus?

So what are my take-home messages? Notwithstanding the good omens, I need a little more convincing about whether MR-IPH represents cause or effect in symptomatic and asymptomatic patients. Second, I would like to know about temporal changes in MR-IPH: Is it a constant feature, or does it regress with time or statin therapy? Third, is MR-IPH associated with increased procedural risks after CAS? Finally, the anomaly regarding MR-IPH in asymptomatic patients could simply reflect small numbers and short follow-up. I hope that others—perhaps even the Transatlantic Asymptomatic Carotid Intervention Trial (TACIT)[3] with its randomized medical arm—will undertake corroborative studies in larger cohorts of patients. The importance of identifying a reliable preoperative marker of increased stroke risk cannot be understated.

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