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Letter by Rundek et al Regarding Article, “Prediction of Clinical Cardiovascular Events With Carotid Intima-Media Thickness: A Systematic Review and Meta-Analysis”

To the Editor:

We congratulate Lorenz et al¹ on their review of carotid intima-media thickness (IMT). The authors acknowledged that the heterogeneity among IMT measurement methodologies and study populations are the most important limitation of their metaanalysis. It is surprising however that the paper lacks discussion regarding the prognostic importance of the presence of carotid plaque. Moreover, no information was provided on plaque prevalence or on the effect that incorporation of plaque into IMT measurements likely had on the results.

Carotid plaque is a distinctive phenotype of atherosclerosis that poses a higher likelihood of rupture, thrombosis, rapid progression, responds to factors that affect endothelial function, and represents remodeling to minimize flow disturbances.² In contrast, IMT principally represents hypertensive hypertrophy of the media and is under a substantial genetic control different from that of plaque.² Carotid plaque most likely is not a simple continuum of IMT progression. Most importantly, recent evidence shows that carotid plaque predicts myocardial infarction risk and the extent of underlying coronary artery disease better than does IMT.²⁻⁴

Plaque is not a rare finding as the authors suggested. The prevalence of atherosclerotic carotid plaque is \approx 40% to 60% in the general population over age of 40 years and approaches 100% at age 70.^{2,5} Therefore, the prevalence of carotid plaque should not be underestimated in studies of preclinical atherosclerotic burden. Moreover, all IMT studies in this pooled analysis consisted mainly of Caucasian populations (with the exception of the Atherosclerosis Risk in Communities study). The results from multiethnic populations with high representation of Hispanics and blacks have shown high prevalence of carotid plaque.⁵ Presence of plaque, in contrast to the authors' statement, may be an important confounder in the predictive models of IMT.

Most IMT studies in this analysis incorporated measurements of plaque into the IMT measurements. In some, IMT was dichotomized above and below a threshold level of IMT, which produced the effect of pooling subjects with plaques into the higher IMT level group because plaques tend to be more

common in those with a thicker IMT. Inclusion of plaque thickness in IMT measurement may have been responsible for a significant association of plaque thickness, rather than IMT, with vascular outcomes. Separate characterization of plaque and IMT is prudent to derive better information on vascular disease risk.

Disclosures

None.

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1. Lorenz MW, Marcus HS, Bots ML, Rosvall M, Sitzer M. Prediction of clinical cardiovascular events with carotid intima-media thickness: a systematic review and meta-analysis. *Circulation*. 2007;115:459–467.
2. Spence JD. Technology insight: ultrasound measurement of carotid plaque-patient management, genetic research, and therapy evaluation. *Nat Clin Pract Neurol*. 2006;11:611–619.
3. Spence JD, Eliasziw M, DiCicco M, Hackam DG, Galil G, Lohmann T. Carotid plaque area: a tool for targeting and evaluating vascular preventive therapy. *Stroke*. 2002;33:2916–2922.
4. Brook RD, Bard RL, Patel S, Rubenfire M, Clarke NS, Kazerooni EA, Wakefield TW, Henke PK, Eagle KA. A negative carotid plaque area test is superior to other noninvasive atherosclerosis studies for reducing the likelihood of having underlying significant coronary artery disease. *Arterioscler Thromb Vasc Biol*. 2006;26:656–662.
5. Prabhakaran S, Rundek T, Ramas R, Elkind MS, Paik MC, Boden-Albala B, Sacco RL. Carotid plaque surface irregularity predicts ischemic stroke: the Northern Manhattan Study. *Stroke*. 2006;37:2696–2701.