Letter by Wong and Poon Regarding Article, “Does Impaired Cerebrovascular Reactivity Predict Stroke Risk in Asymptomatic Carotid Stenosis? A Prospective Substudy of the Asymptomatic Carotid Emboli Study (ACES)”

To the Editor:

We read with great interest the article by angiotensin-converting enzyme investigators entitled “Does Impaired Cerebrovascular Reactivity Predict Stroke Risk in Asymptomatic Carotid Stenosis? A Prospective Substudy of the Asymptomatic Carotid Emboli Study.” The authors carried out a 7-center prospective study to investigate whether impaired carbon dioxide cerebrovascular reactivity (CO2 CVR) by transcranial Doppler ultrasound predicted ischemic events in 106 patients with asymptomatic carotid stenosis. Although meta-analysis suggested an association between impaired CO2 CVR, the authors argue that with their results of low stroke risk patients with asymptomatic carotid stenosis ACS who are treated with current medical therapy, the technique may not be useful to identify patients for carotid endarterectomy.

The authors mention that their study was underpowered to detect any difference and this should be emphasized. The other caution is whether there are significant blood pressure fluctuations that warrant corrections for CO2 CVR. Change in arterial blood pressure commonly accompanies rises in arterial blood CO2 concentration and could confound assessments of carbon dioxide CVR. A rise in blood pressure may be associated with cerebral blood flow and hence middle cerebral artery flow velocity. The latter may lead to an overestimation of CO2 CVR. The other effect of rise in blood pressure is compensatory cerebral vasoconstriction, which may counter the carbon dioxide-induced cerebral vasodilatation. Pressure-corrected CO2 CVR has been proposed to solve the mentioned uncertainty.

Lastly, the association between aspirin and patients with preserved CO2 CVR may further mask the possible relationship between CO2 CVR and ischemic events. Other than CO2 CVR by transcranial Doppler, modern multislice perfusion CT with acetazolamide challenge could also potentially provide useful data using regional CO2 CVR and may be considered in a future prospective multicenter study.

Disclosures

None.

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