
Wei-Chuan Tsai,1 Yuan-Ting Sun,2 Yen-Wen Liu,1 Chin-Shan Ho,3 Ju-Yi Chen,1 Ming-Chen Wang,1 and Liang-Miin Tsai1

To the Editor: We thank Dr Teixeira and colleagues for their interest in our paper titled, "Usefulness of Vascular Wall Deformation for Assessment of Carotid Arterial Stiffness and Association With Previous Stroke in Elderly."1 We reported that circumferential strain (CS) and circumferential strain rate (CSR) of the carotid artery derived from speckle tracking echocardiography were useful for the assessment of local arterial stiffness and that they were associated with previous stroke in elderly men. In their Letter to the Editor, Dr Teixeira and colleagues suggested that the influence of blood flow should be considered when assessing local arterial stiffness. They advised that echo-Doppler-derived carotid blood flow and multiple echocardiographic variables could be adjusted as covariates in a multivariate model for the prediction of stroke. We appreciate this suggestion and agree that this is a potentially important question.

Blood pressure and the pulsatile component of blood flow are always major factors for arterial stiffness, whatever method is used for assessment. In our study, we adjusted blood pressure in the multivariate model for the association between carotid deformation and previous stroke. A previous study by Dr Catalano and colleagues used corrected carotid CS divided by pulse pressure to integrate the pulsatile component of blood flow.2 They found that corrected CS was a more significant factor for cardiovascular risks than CS alone in a population without vascular disease. We also adjusted CS or CSR with pulse pressure in our study; however, the corrected parameters did not provide any additional information with regard to previous stroke.

We greatly appreciate the suggestion from Dr Teixeira and colleagues. Unfortunately, we did not include echocardiographic or carotid Doppler data in our study because the study was based on a health survey program provided by health insurance. Therefore, we could not add additional information on this topic.

We concluded that carotid CS and CSR parameters for local rather than systemic arterial stiffness. The suggestion by Dr Teixeira and colleagues was based on their recent study, which demonstrated that aortic CS in the ascending aorta is primarily determined by stroke volume index in moderate to severe aortic valve stenosis (AS).3 In contrast to this study, our previous study showed that pulse wave velocity (a systemic index of arterial stiffness) was independently correlated with the degree of aortic valvular calcification and severity of AS after adjusting for blood pressure and left ventricular systolic function.4 It is now well accepted that there are parallel changes between degenerative AS and aortic stiffness.

Since the ascending aorta is the direct reservoir after blood flow ejects through the aortic valve in AS, local properties of the aorta such as CS are mostly affected by stroke volume. However, the effect of blood ejection will probably not be the same in the carotid artery since the size and characteristics of the vessel are different and the distance the blood has to travel is longer. The condition will also not be the same in subjects without AS. This issue remains to be elucidated.

DISCLOSURE

The authors declared no conflict of interest.

REFERENCES


Correspondence: Wei-Chuan Tsai (wctsai@seed.net.tw).

1Department of Internal Medicine, National Cheng Kung University Hospital, Tainan, Taiwan; 2Department of Neurology, National Cheng Kung University Hospital, Tainan; and 3Department of Adapted Physical Education, National Taiwan Sport University, Taoyuan, Taiwan.

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