

Letter to the Editor

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Letter by Nagai et al Regarding Article, “Antihypertensive Drug Use, Blood Pressure Variability, and Incident Stroke Risk in Older Adults: Three-City Cohort Study”

To the Editor:

We read the interesting recent article by Tully et al¹ who found that the angiotensin receptor blocker (ARB) and β -blocker were associated with incident stroke, whereas long-term visit-to-visit blood pressure (BP) variability was not associated with that in the elderly. The mechanism underlying in the relationship between β -blocker use and increased stroke risk was suggested as compensatory hemodynamic changes associated with decreased heart rate.² Thus, in the elderly, increased aortic stiffness and pressure wave reflection lead to increased central aortic pressures with β -blocker use.² On the other hand, there were less explanations for the relationship between ARB use and an increased stroke risk in relation to long-term visit-to-visit BP variability.

In the cross-sectional study, visit-to-visit BP variability has been shown to be associated with artery remodeling,³ which was suggested to be a risk with stroke.⁴ In addition, we have reported the relationship between visit-to-visit BP variability and stiffness in common carotid artery among the 164 elderly subjects (79.7 years old at baseline; 75%, women; ARB use, 30%; angiotensin-converting enzyme inhibitor use, 5.1%) with ≥ 1 cardiovascular risks. On the basis of 12 visits (once a month), visit-to-visit BP variability (expressed as the standard deviation) was measured. In the mean 4.2 years of follow-up, standard deviation and average in systolic BP were significantly associated with stiffness parameter β at the follow-up after adjustment for confounding factors, including age, smoking, lower high-density lipoprotein level, baseline stiffness parameter β , and follow-up period. Specifically, standard deviation and average in systolic BP were significant predictors for stiffness parameter β at the follow-up in the group with renin-angiotensin system inhibitor use (n=59), while those were not associated with stiffness parameter β in the group without renin-angiotensin system inhibitors use (n=105; M. Nagai et al, unpublished data, 2016).

In light of this background, arterial stiffness is suggested to be a pivotal moderator for the relationship between visit-to-visit BP variability and a stroke risk in the group with ARB use. Cerebral vessels that rise directly from large arteries might be

fragile with regard to increased BP variability. If the stiffness in large arteries were increased, the effect of BP variability on cerebral vessels would be augmented, resulting in cerebral vascular disease. Thus, visit-to-visit BP variability in the group with ARB use might be a risk rather than an epiphenomenon of stroke. In the article reported by Tully et al,¹ the relationship between long-term visit-to-visit BP variability and an increased stroke risk was not analyzed according to whether the patients used ARBs.

Until now, in the real world, there have been few reports assessing the relationship between visit-to-visit BP variability and a stroke risk according to the class of antihypertensive medications. The data presented in this study would, thus, make an important contribution provided that they are considered with a viewpoint of pathophysiology stratified by the class of antihypertensive medications.

Disclosures

None.

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