Intervisit Blood Pressure Variability and Outcome: Is Heart Rate a Missing Confounder?

To the Editor:

In their recent article in Hypertension, Muntner et al.1 examined the correlates and prognostic significance of intervisit blood pressure (BP) variability in Third National Health and Nutrition Examination Survey participants. They report that increased intervisit variability was related to age, physical inactivity, BP, laboratory abnormalities, comorbid conditions, and prescribed medications. Independent of these associations, systolic intervisit variability was found to predict all-cause mortality, thus reinforcing and expanding on previous reports by Rothwell et al.2

Muntner et al.,1 as well as previous investigators, found a relation between intervisit BP variability and prescribed medications. They report that medications were more frequently used in patients in the upper tertile of systolic BP variability. However, the causality, mechanisms and class-specific characteristics of this relationship have not been established. We suggest that heart rate may bear on BP variability and may also partially mediate the relationship between medications and intervisit variability. Both precision and accuracy of BP measurement (assuming constant cuff deflation rate) are compromised in the face of lower heart rate.3,4 Thus, bradycardia, whether related or not to the use of medications, might be a confounder contributing to apparently increased intervisit BP variability and possibly affecting outcome differences.

We are therefore eager to learn whether heart rate measured in the clinic, an independent predictor of all-cause mortality,5 was associated with intervisit BP variability in the Third National Health and Nutrition Examination Survey cohort (we predict lowest covariate-adjusted heart rate in the upper tertile of systolic BP variability) and whether inclusion of heart rate in outcome models alters the effect of intervisit variability.

Disclosures

None.

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