The Interarm Blood Pressure Difference

To the Editor:

Agarwal et al report on the prognostic significance of an interarm blood pressure difference in a cohort of renal and general medical clinic subjects. They cite studies in asserting that the right arm blood pressure consistently reads higher than the left. We have systematically reviewed these and other studies. We found no overall evidence of a bias in favor of a higher pressure on the right. They also state that no study has demonstrated greater reproducibility of the interarm difference (IAD) with obstructive arterial disease, yet our analysis of existing data showed a significantly higher prevalence of a systolic IAD ≥10 mm Hg with cardiovascular disease than without (19.4% versus 2.7%; odds ratio: 4.34; 95% CI: 2.09 to 9.04; \( P < 0.0001 \)).

They adopted a sequential measurement technique, which we have identified as an important source of bias, and our meta-analysis showed that studies recording sequentially measured IADs reported significantly higher prevalences of systolic and diastolic IADs compared with simultaneous arm measurements. The choice of the first arm in this study was not randomized, another potential confounder for a systematic bias toward 1 arm blood pressure being higher. Our review reported overall systolic IAD prevalences of 19.6% ≥10 mm Hg (95% CI: 18.0% to 21.3%) and 4.2% ≥20 mm Hg (95% CI: 3.4% to 5.1%) and a diastolic prevalence of 8.1% ≥10 mm Hg (95% CI: 6.9% to 9.2%) for studies meeting our inclusion criteria. We predicted that IAD prevalences should be higher in cohorts at increased risk of peripheral vascular disease; however, we believe that the high prevalences of IAD reported in this study of 39% ≥10 mm Hg systolic difference and 15% ≥10 mm Hg diastolic difference should be interpreted with caution because of methodologic concerns. This questions the reliability of the survival data based on these findings.

Over a median 5.6 years of follow-up, the association of an IAD with increased cumulative hazard of death was reported for subjects with and without chronic kidney disease. The authors assert that it is not clear that these findings would hold for less selected populations; however, previous publications report just this association from our own group, reporting a prospective study of hypertensive subjects from United Kingdom primary care and from Aboyans et al, reporting a retrospective study of clinic and community-based cohorts in San Diego, California; Chicago, Illinois; and California. We reported an association of systolic IAD ≥10 mm Hg with reduced event-free survival, and Aboyans et al found an association of systolic IAD ≥15 mm Hg with increased mortality.

This new study provides further support for our suggestion that the IAD may be associated with peripheral vascular disease and reduced event-free survival. However, as Aboyans et al have concluded, additional prospective population studies using individuals from primary care settings are needed to confirm this association.

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