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COMMENTARY

Normotension, blood pressure variability and early target organ damage

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Arterial hypertension is an important public health challenge. Worldwide, nearly 8 million premature deaths, 54% of stroke cases and 47% of ischemic heart disease cases were attributable to high blood pressure (BP, >115 mm Hg systolic) in 2001. About half of these cases develop in people with arterial hypertension (>140/90 mm Hg); the remaining cases affect patients with BP levels that are normal or high normal.[1] Wide intra-individual variability in BP influences prognosis and contributes to the burden of cardiovascular (CV) disease. In fact, data collected over the past 50 years through ambulatory BP monitoring (ABPM)[2] have shown that BP is a highly variable parameter in both normotensive and hypertensive subjects.

The potential role of BP variability as an independent predictor of organ damage and CV events was initially described years ago,[3,4] but most recommendations related to hypertension management are still based on isolated clinic measurements, and BP variability is not recognized as an important prognostic parameter in recent guidelines.[5]

Recent data have increased interest in the prognostic significance of this parameter in the context of CV prognosis.[6–9] Some of these studies have investigated more refined estimates of BP variability based on ABPM.[6,7] However, the recent demonstration in hypertensive patients[8] and the general population[9] that variability in BP measurement occurring over days or months—obtained in clinical visits in the case of hypertensives patients[8] and in iterative BP estimations in the general population followed in the NHANES study[9]—has greatly expanded the scope of investigations of the role of BP variability in CV prognosis.

In this issue of *Hypertension Research*, Schutte *et al.*[10] report interesting data that correlate short-term BP variability and electrocardiographic left ventricular mass in normotensive African patients, including both normo- and hypertensive subjects. As a measure of short-term reading-to-reading BP variability, the authors used averages of daytime and nighttime SDs weighted for the duration of the daytime and nighttime intervals, as proposed previously.[5] These data confirm the role of BP variability in normotensive subjects. The burden of disease attributable to high BP has already been established in normotension (BP<140/90 mm Hg).[1] The data of Schutte *et al.*[10] demonstrate that BP variability is involved in the development of target organ damage in normotensive blacks. African populations are known to have a two- to threefold greater prevalence of left ventricular hypertrophy,[11] which contributes more to the risk of CV mortality in African-Americans than in Caucasians.[12]

Interestingly, the same electrocardiographic findings were not obtained in Caucasian patients or in hypertensive African patients. In hypertensive Caucasians, an independent relationship between carotid cross-sectional wall area and 24-h systolic BP variability was found.

These data confirm a relationship between BP variability and target organ damage, but also that there are ethnic differences that require additional studies to clarify when the analysis and treatment of BP variability can be useful in clinical practice.

CONFLICT OF INTEREST

The author declares no conflict of interest.

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