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Masked Hypertension: An Independent Cardiovascular Risk Factor or a Facet of True Blood Pressure Level?

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The risk of cardiovascular mortality increases linearly without any thresholds from office blood pressure (BP) levels of <120/80 mm Hg.[1] At an individual level, BP-related risk estimation is more challenging. An alert reaction at the office may lead to a disproportionately high office BP and to the diagnosis of "white coat" hypertension, and vice versa, patients with a normal office BP may have an elevated out-of-office BP and so-called masked hypertension (MHT).

MHT, defined by both ambulatory and home BP monitoring, has been associated with increased prevalence of left ventricular hypertrophy, increased pulse wave velocity, and carotid intima–media thickness.[2–4] According to several studies, the lifestyle and metabolic risk profile of patients with MHT resembles that of sustained hypertensive participants.[5–8] Most important, patients with MHT, diagnosed by home or ambulatory BP monitoring, have an increased risk of cardiovascular morbidity and mortality compared with persons with sustained normotension.[8–10] Even patients with white coat hypertension have an increased risk of sustained hypertension and cardiovascular events.[9–11]

BP fluctuates in the short and longer term for intrinsic and extrinsic reasons. Consequently, the definition of office and home BP should be based on multiple measurements taken on separate occasions and under carefully standardized circumstances. Ambulatory BP carries information of 24-hour BP load during daily activities, which may also vary from day to day. In epidemiological studies, office BP is usually based on 2 or 3 measurements taken on a single occasion. It is not surprising that the correlation between office and out-of-office BP and the reproducibility of MHT is moderate at best. According to the recent report from the Spanish ABPM Registry, the short-term (<1 month) reproducibility of MHT was moderate (68%), but the longer term reproducibility was poor (36%), with a shift toward sustained hypertension.[12] According to the population-based Finn-Home study, 73% of untreated participants with MHT at baseline developed sustained hypertension in 11 years.

In this issue of the *Journal of the American Heart Association*, Redmond et al reported cross-sectional findings of MHT from the Jackson Heart Study.[13] They studied 909 adult African American participants with a mean age of 59.1 years. The prevalence of MHT was 20.6% in the entire study population and 27.5% among those with office BP <140/90 mm Hg. The prevalence of MHT increased from 12.9% of the normotensive participants to 36.3% of the prehypertensive participants. Left ventricular hypertrophy was higher among those with MHT compared with participants without MHT, and the association was independent of the office BP category. In contrast to some other studies, MHT was not an independent marker of increased common carotid intima–media thickness.[3,4] The Jackson Heart Study confirmed that MHT is a common phenomenon, and its prevalence increases along with the rising level of the office BP. In the International Database of Ambulatory Blood Pressure in Relation to Cardiovascular Outcome (IDACO), the prevalence of MHT was 13.4% among the 8237 study participants with a mean age of 50.7 years and 16.9% among the 6536 participants who did not have sustained hypertension. In the International Database of Home Blood Pressure in Relation to Cardiovascular Outcome (IDHOCO), the prevalence of MHT increased from 5.0% to 18.4% and 30.3% in participants with optimal (<120/80 mm Hg), normal (120–129/80–84 mm Hg), and high-normal (130–139/85–89 mm Hg) office BP, respectively.[11]

MHT is a common phenomenon, especially among prehypertensive patients. The lifestyle, metabolic, and target organ damage risk profile of patients with MHT resembles that of patients with sustained hypertension, and the risk of sustained hypertension and cardiovascular events is elevated. MHT is associated with target organ damage and cardiovascular morbidity and mortality independent of office BP but not self-measured home BP.[4,8] Consequently, the cardiovascular risk associated with MHT may reflect only the risk associated

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with the patient's "true" BP level, as assessed by out-of-office measurements.

Patients with MHT require lifestyle evaluation and treatment. Close follow-up is necessary. Home BP monitoring could be a good and cost-effective choice complemented by ambulatory BP monitoring, as needed.

Disclosures

None.

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