Global Impact of 2017 American Heart Association/American College of Cardiology Hypertension Guidelines

A Perspective From Japan

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The 2017 American Heart Association/American College of Cardiology (AHA/ACC) guidelines for the prevention, detection, evaluation, and management of high blood pressure (BP) in adults were recently released.[1] The core concept in these guidelines is earlier and tighter BP control over 24 hours, with the aim of providing more sustained target organ protection and cardiovascular disease prevention. These guidelines lower the threshold of hypertension diagnosis and target BP levels to 130/80 mm Hg. This direction of strict BP control with a new definition and universal target goal for hypertension will be the topic of debate among the guideline developing committee members of the Japanese Society of Hypertension.[2]

REDUCTION IN THE BP THRESHOLD FOR HYPERTENSION DIAGNOSIS

Evidence in support of this change to a lower threshold (130/80 mm Hg) has been provided by recent publications, including SPRINT (Systolic Blood Pressure Intervention Trial) and *The Lancet* 2016 meta-analysis of randomized controlled trials of antihypertensive medications.[3,4] In *The Lancet* meta-analysis, a BP reduction of ≈25% was shown to be of benefit in preventing cardiovascular events, especially stroke and heart failure, among people with a baseline systolic BP of ≥130 mm Hg. In SPRINT, automated office BP measurement without study personnel present in the room with the patient was conducted in some centers, which could yield BP values 10 to 15 mm Hg lower than BPs taken by routine clinical measurement. Thus, the achievement of strict systolic BP control of 120 mm Hg is postulated to be comparable to 130 to 135 mm Hg by routine clinical assessment. Accordingly, a clinic BP cutoff of 130/80 mm Hg seems reasonable both as a threshold for hypertension diagnosis and as a target BP for hypertension treatment.

From the viewpoint of vascular health, earlier detection of stage 1 hypertension with the new diagnostic threshold (130–139/80–89 mm Hg) together with a cautionary approach for nondiagnostic cases of "elevated BP" (systolic BP, 120–129 mm Hg; diastolic BP, <80 mm Hg) would be important to minimize vascular damage from early stages of life. In later stages of life, exaggerated "BP surge," associated with increased BP variability, could further precipitate cardiovascular events, especially in high-risk hypertensive patients with advanced vascular disease.[5] Thus, strict BP lowering from early in life should maintain vascular health and minimize the magnitude of exaggerated pathological BP surge,[5] resulting in protection against cardiovascular disease and organ damage in later life.

HOME AND AMBULATORY BPS

Another strength of the new guidelines is the focus on a practical approach for the effective management of hypertension using home BP monitoring and ambulatory

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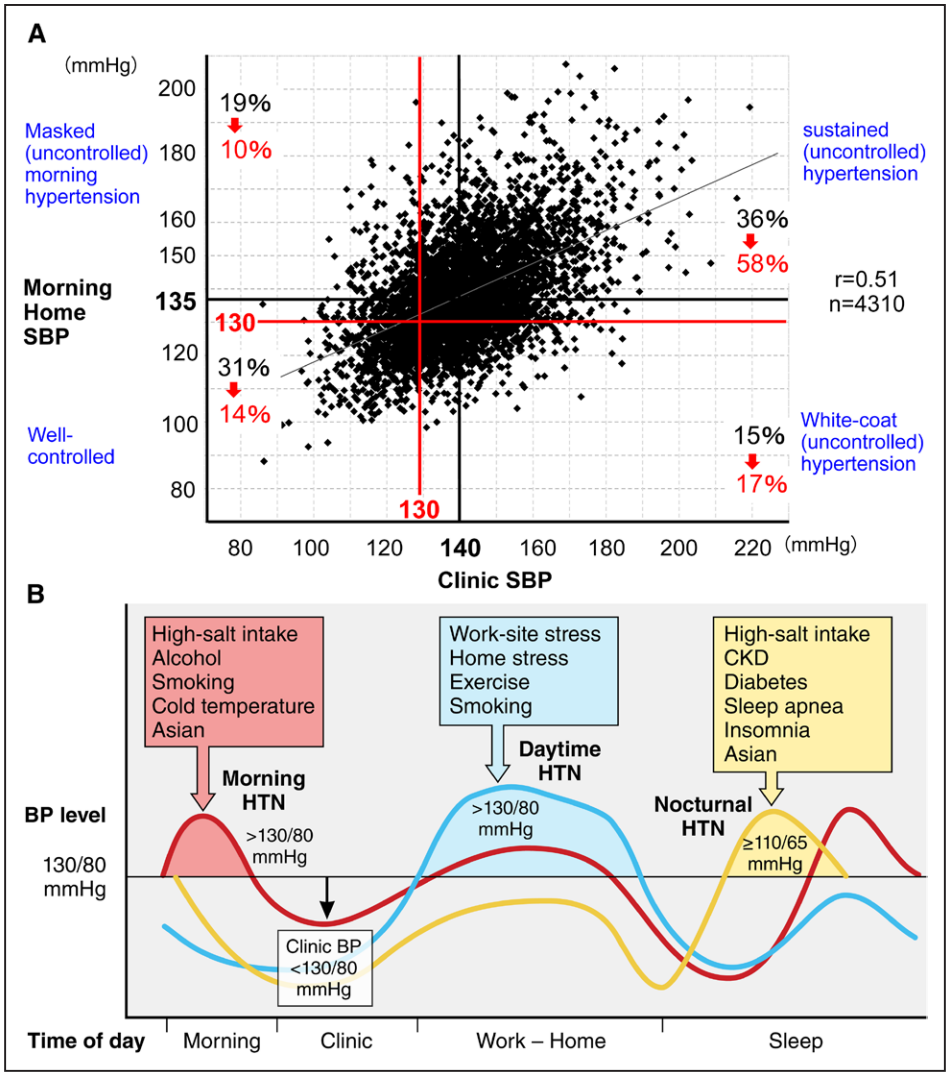

Figure. Prevalence of hypertension patterns (A) and 3 types of masked hypertension (B).
A, Shift of the prevalence of hypertension patterns classified by the new American Heart Association/American College of Cardiology 2017 guidelines (red) from those classified by the previous Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure guidelines (black) in subjects in the J-HOP study (Japan Morning Surge-Home Blood Pressure; 4310 medicated hypertensives: mean age, 64.9 years; men, 47%). **B**, Three types of masked hypertension and affecting factors: masked morning, daytime, and nocturnal (uncontrolled) hypertension. BP indicates blood pressure; CKD, chronic kidney disease; HTN, hypertension; and SBP, systolic blood pressure.

BP monitoring. The use of a simple universal threshold of 130/80 mm Hg for all the clinic, home, and daytime ambulatory BP measures results in a clear improvement in the detection and management flow for white-coat hypertension and masked hypertension. Because home BP–guided individual management complemented by the use of ambulatory BP monitoring was already strongly recommended in the previous Japanese Society of Hypertension 2014 guidelines, the practical use of home BP monitoring and ambulatory BP monitoring is already accepted in Japan.

However, the new definition in the 2017 AHA/ACC guidelines markedly changes the prevalence of hypertension subtypes. Here, I have evaluated the changes in the prevalence of hypertension subtypes classified on the basis of new thresholds in the general practice–based national registry of home BP, the J-HOP study (Japan Morning Surge-Home Blood Pressure).[5] The prevalences of normotension, white-coat hypertension, masked hypertension, and sustained hypertension are changed from 31%, 15%, 19%, and 36% with the previous Eighth Report of the Joint National Committee on Prevention definition (140/90 mm Hg for clinic BP and 135/85 mm Hg for home BP) to 14%, 17%, 10%, and 58% with the AHA/ACC 2017 definition (130/80 mm Hg for both clinic and home BPs; Figure, A). By the new criteria, the prevalence of uncontrolled sustained hypertension is increased, whereas that of masked uncontrolled hypertension is decreased. This uniform BP threshold

of 130/80 mm Hg for both clinic and home BPs could be acceptable for 2 reasons. First, in general, the difference between clinic and out-of-clinic BPs decreases at the lower end of BP to reach a similar level (Figure, A). Second, the decrease in masked hypertension and the increase in sustained hypertension would give clinicians the opportunity to treat hypertension in this group of patients known to have heightened cardiovascular risk.

PRACTICAL MORNING HOME BP–GUIDED APPROACH AND FUTURE NOCTURNAL BP MANAGEMENT

How should we practically manage hypertensive patients in conjunction with the 2017 AHA/ACC guidelines? Factors contributing to BP elevation among different hypertension subtypes should be considered according to the time of day (Figure, B) to achieve 24-hour BP control at the target goal.[5]

The morning home BP–guided approach is the first step for a strategy leading to "zero" cardiovascular events.[2,5] There have been several prospective home BP monitoring studies, including the general population-based Ohasama Study, the general practitioner–based J-HOP Study, and the hypertensive outpatient HOMED-BP study (Hypertension Objective Treatment Based on Measurement by Electric Devices of Blood Pressure). All demonstrated that morning home BP is a better prognostic predictor of cardiovascular events than clinic BP.[2,5] In the largest nationwide observational HONEST study (Home BP Measurement With Olmesartan Naive Patient, to Establish Standard Target Blood Pressure; n>20 000), a morning home systolic BP of ≈125 mm Hg was associated with the lowest risk for both coronary and stroke events.

The 2017 AHA/ACC guidelines also defined a threshold of nocturnal BP (110/65 mm Hg). In terms of pathological conditions, nocturnal hypertension is frequently found in high-risk patients with diabetes mellitus, chronic kidney disease, or sleep apnea. Thus, the detection of nocturnal hypertension by ambulatory BP monitoring or nocturnal home BP monitoring and the management of uncontrolled nocturnal hypertension might be recommended even in patients with well-controlled normotension by office and morning home BPs.

PERSPECTIVES

In Japan, we are now revising the Japanese Society of Hypertension guidelines for the management of hypertension. The new guidelines will seek to facilitate perfect 24-hour BP management for patients with all forms of hypertension ranging from morning to nocturnal and will be designed for use in conjunction with the 2017 AHA/ACC guidelines. This information communication technology–based anticipation approach based on the individual time-series big BP data is expected to dramatically suppress the incidence of cardiovascular events and to improve the health and longevity of patients worldwide.[5]

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FOOTNOTES

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