



Five special focuses of Hypertension Research: digital hypertension, home blood pressure-centered approach, renal denervation, Asians, for guidelines

Kazuomi Kario¹ · Satoshi Hoshide¹ · Masaki Mogi²

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Hypertension Research is accepting submissions for a special issue (figure) focusing on five research topics: digital hypertension, home blood pressure-centered approaches, renal denervation, Asians, and for guidelines with a particular emphasis on papers from the Asian region. Because Asia is a diverse continent, hypertension and its associated complications have many unique Asian characteristics and must be approached with regional and racial differences in mind [1]. All of the following articles include a section titled “Asian Perspectives” from Asian researchers on diverse topics. These pieces of evidence will contribute to future guidelines.

Asian evidence: long-term blood pressure trajectories and blood pressure variability

Zheng W et al. investigate the relationship between blood pressure (BP) trajectories from ages 6 to 45 and cardiovascular risk in adulthood and cardiovascular risk assessed through target organ damage (TOD) among 2430 individuals in Hanzhong Adolescent Hypertension Cohort [2]. Researchers identified four distinct BP trajectories: low stable, moderate stable, high stable (low increasing), and moderate increasing based on the baseline BP levels and during the 30-year follow-up. Higher BP trajectories in early life were linked to greater cardiovascular risk in

midlife, including left ventricular hypertrophy and carotid atherosclerosis. These findings suggest that higher longitudinal BP trajectories in early life are associated with a greater cardiovascular risk in midlife, and identifying these trajectories early may aid in identifying individuals at risk for TOD later in life.

Wu S et al. examined the relationship between BP variability (BPV) and the risk of cardiovascular disease (CVD) in a Chinese population [3]. Among 64,810 participants (median follow-up of 10.91 years) without prior CVD, those with significant systolic BP (SBP) variability had a higher CVD risk. Longer time intervals between BP measurements strengthened this association. The direction of BP variation analysis demonstrated that rising SBP was linked to increased CVD risk (hazard ratio [HR], 6.17), while falling SBP was associated with lower risk, particularly among men. While there has been extensive research on the association between BPVs and the onset of cardiovascular disease [4], the majority of these studies have predominantly focused on European populations. This paper’s significance is found in its reporting of the association between BPV and CVD risks in a large cohort of Asian populations with long time follow-ups. These Asian manuscripts together provide valuable insights into the relationship between BP and cardiovascular risk.

Home blood pressure monitoring

The use of out-of-office BP measurements through home BP monitoring and/or ambulatory BP monitoring enables the identification of distinct BP patterns, including BPV. While office BP provides a snapshot at a specific time point, home BP measurement, when taken daily following the updated international guidelines, can provide valuable BP data that may predict future cardiovascular risks. There is

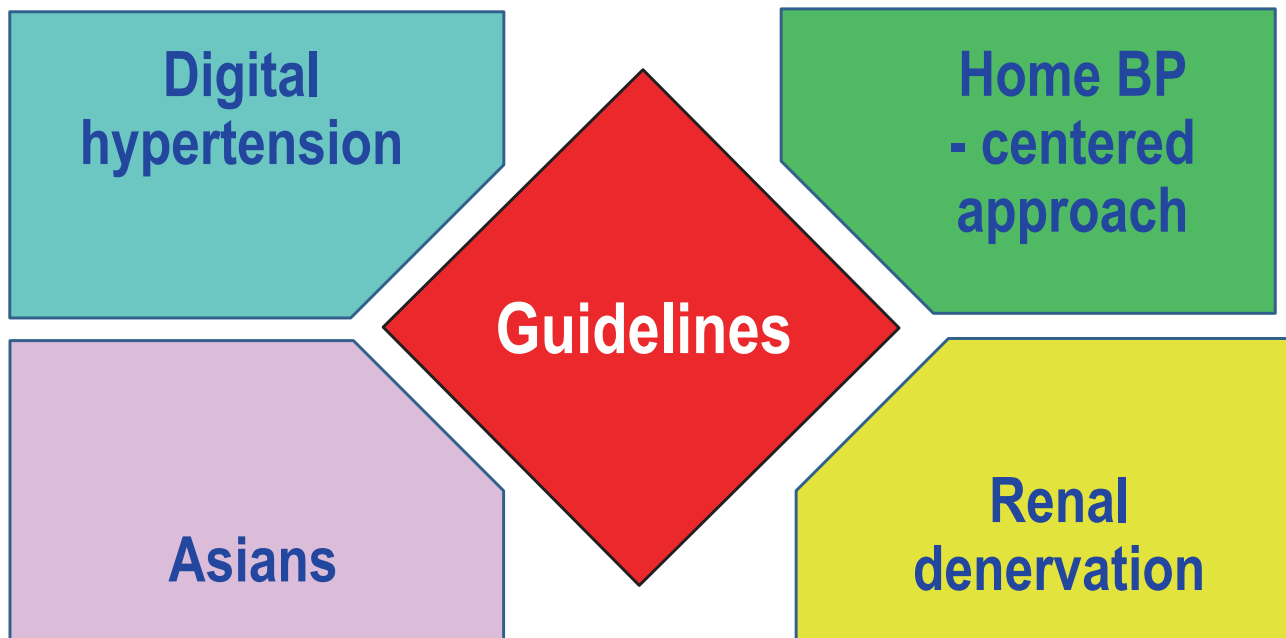
✉ Kazuomi Kario
kkario@jichi.ac.jp

¹ Division of Cardiovascular Medicine, Jichi Medical University School of Medicine, Tochigi, Japan

² Department of Pharmacology, Ehime University Graduate School of Medicine, Ehime, Japan

Graphical Opinion

Special focus of Hypertension Research



substantial evidence suggesting that out-of-office BP measurements have demonstrated a stronger association with cardiovascular risk when compared to office BP [5–7].

In this issue, the consensus statement on a home BP-centered approach from the HOPE Asia Network has been published [8]. This contribution introduces a novel concept of a home BP-centered approach, which involves using self-measured home BP readings to achieve personalized and anticipatory medicine. This approach aims to prevent cardiovascular events by predicting an individual's risk throughout their lifetime. It is applicable to both digital health initiatives aimed at promoting healthy living among asymptomatic individuals and patients with diseases, as well as digital medicine interventions such as telemedicine and digital therapy designed to treat patients.

Another manuscript that assesses home BP discusses a predefined ANAFIE sub-cohort study [9]. It reports the results of the sub-cohort (4933 patients) that examined the outcomes of anticoagulant therapy in elderly Japanese patients with non-valvular atrial fibrillation and high home SBP. Strict BP control is essential for patients on anticoagulant therapy, particularly for warfarin users with high SBP (≥ 145 mmHg). In the DOAC group, although not statistically significant, there was a trend of increased adverse events at SBP ≥ 145 mmHg. These findings underscore the importance of monitoring and managing BP in this population.”

Renal denervation

Inappropriate sympathetic activation causes an increase in BP and can lead to lifestyle diseases like hypertension and atherosclerotic disease. Renal denervation aims to regulate the heightened signaling between the kidneys and the central Sympathetic Nervous System (SNS), which may play a role in the sympathetic hyperactivity observed in resistant hypertension. This device-based treatment was given a Class II recommendation with a Level of Evidence B in the recently published 2023 ESH Guidelines. A review article for the effectiveness of renal denervation was written by Akumwami S and colleagues [10]. This and the previous reviews summarize evidence from animal studies, and highlights that the renal denervation (RDN), through surgical and catheter-based methods, effectively lowers blood pressure and demonstrates organ-protective benefits beyond BP regulation, including cardiovascular, renal, glucose tolerance, and anti-inflammatory effects [10, 11]. Hu X et al. discusses the challenges faced by RDN due to the variability in BP responses after the procedure [12]. These challenges arise from the difficulty in identifying suitable candidates for RDN and determining the intervention's success. The paper proposes a solution to enhance RDN accuracy: using three-dimensional reconstruction technology in conjunction with electrical renal nerve stimulation to guide radiofrequency catheter ablation. This approach has

the potential to advance selective and precise RDN in clinical practice.

Other interesting papers

In a multicenter cross-sectional study of new onset of postpartum hypertension in 18,295 normotensive women without a history of gestational hypertension, independent risk factors were maternal age >35 years, nulliparity, normotension and hypertension at last antenatal checkup, urine protein 1+, scheduled cesarean section and especially emergency cesarean section (odds ratio: 10.0) [13]. This study represents a high-risk group for new onset of postpartum hypertension that requires close monitoring of postpartum blood pressure. Long-term follow-up is warranted.

A new clinical imaging nomogram was proposed to predict primary aldosteronism in hypertensive patients [14]. Further validation in other databases and different populations is needed.

The prescription patterns of antihypertensive medications in Japan during the COVID-19 epidemic, especially those for renin-angiotensin system inhibitors, are interesting [15]. Future comparative studies between countries are warranted.

Finally, a large prospective cohort study with 10 years of follow-up showed that a calculated increase in low-density lipoprotein cholesterol (sdLDL-C) predicts new onset of hypertension [16]. The clinical significance of this finding will be clarified by analyzing the trajectory of sdLDL-C for hypertension.

Conclusion

Asia encompasses the world's most diverse array of ethnicities. However, many of the current international guidelines for hypertension management are largely based on evidence from Western countries. In this issue, we feature results from large-scale Asian cohorts, the latest HOPE Asia Network consensus statement, and a review of renal denervation. Together with previous Asian evidence and consensus [17–22], we are confident that the content we present will be highly satisfying for our readers, and will currently progress toward guidelines and clinical implementation in Asia.

Compliance with ethical standards

Conflict of interest The authors declare no competing interests.

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