

## Editorial



# Hypertension in Older Women: The Biggest Challenge for Cardiovascular Health in an Aged Society

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## OPEN ACCESS

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The data generated in this study is available

“Frailty, Thy Name is Woman”

(Hamlet, Shakespeare)

Cardiovascular disease (CVD) is common among men. The prevalence of CVDs, such as hypertension, ischemic heart disease, and heart failure, is significantly higher among men than women. In addition, the CVD-related healthcare costs for men are greater than for women.<sup>1)</sup> Men are more likely to develop CVD at an earlier age than women; however, when we look at older populations, the sex-related risk pattern is reversed. The incidence and prevalence of hypertension, coronary artery disease, heart failure, and atrial fibrillation increase rapidly among older women. In addition, the future morbidity or mortality risk is higher among female patients with atrial fibrillation or heart failure. Women also have a higher mortality rate and a worse prognosis after acute cardiovascular events. With the population aging, CVD among women will be an important healthcare issue to be solved for the active and healthy society. To accomplish this, we need to understand the underlying factors associated with the rapid increase in CVD among older women. Moreover, we also need to identify the critical time point for interventions to prevent CVD development.

In this issue, Seo et al.<sup>2)</sup> report a sex-specific trend of hypertension in Korea by analyzing data from the Korea National Health and Nutrition Examination Survey (KNHANES). KNHANES contains nationally representative data. Thus, the analysis reflects the characteristics of hypertension trends in Korea over the last 20 years. The authors showed that the overall prevalence of hypertension is higher in men than in women. However, the prevalence of hypertension is higher and the number of people with hypertension is greater in women among the older population. Furthermore, hypertension is poorly controlled in women; thus, the number of hypertensive patients with elevated blood pressure (BP) (>140/90 mmHg) is twice in women compared with men. Multimorbidity is also more common in elderly women. These characteristics suggest that hypertension in older women is common, increases rapidly, and shows unfavorable risk profiles. In particular, older women with hypertension have more risk factors and multimorbidities.<sup>3)</sup> Accumulated risk factors increase the risk of CVD and adverse cardiovascular outcomes. Further, multimorbidity is associated with poor health-related quality-of-life and functional disabilities, which are also important clinical outcomes among older patients.<sup>4)</sup> In most countries, women live longer than men. Thus, the

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trend of increasing hypertension prevalence and the number of hypertensive patients among older women will be an urgent problem in an aged society.

Several factors are associated with the sex-dependent changes in BP with aging. Biological differences (e.g., differences in gene expression, sex hormones, and function of cardiovascular system) may be associated with the diverse pattern of BP changes with aging between men and women. Specifically, sex hormones are considered to be the most important factor related to the increased BP observed among older women because they display a rapid increase in BP after menopause. Loss of estrogen may be involved in this postmenopausal BP increase, but some data also suggest that androgens may increase BP through activation of the renin-angiotensin system.<sup>5)</sup> Gender differences in sociocultural factors, such as exposure to environmental factors, nutrition, exercise, and stress, also influence BP changes associated with aging.

A sex-specific strategy for reducing BP or preventing cardiovascular events has not been elucidated, but we know that BP dramatically changes during the perimenopausal period. This is important because we can identify the vulnerable target population who would most benefit from intensive lifestyle modification. A novel approach for enhancing cardiovascular health and decreasing BP in perimenopausal women should be developed. In addition, a simplified and optimized treatment algorithm for patients with uncontrolled hypertension, especially older women, should be developed.<sup>6)</sup>

Identifying the problem is the initial step, followed by finding a method for correcting the problem. Hypertension or elevated BP are leading risk factors for other CVDs. Thus, hypertension in older women has a negative impact on the risk of other CVDs. Finding an answer to solve the problem of increasing BP and hypertension in older women will decide the fate of cardiovascular health of upcoming aged society.

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