

Cohort study

Aiming too high or too low? Searching for the appropriate therapeutic thresholds in hypertension is not over yet

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Commentary on: Rodriguez CJ, Swett K, Agarwal SK, *et al.* Systolic blood pressure levels among adults with hypertension and incident cardiovascular events: the Atherosclerosis Risk in Communities Study. *JAMA Intern Med* 2014;174:1252–61.

Context

Increased arterial blood pressure (BP) is an established and modifiable cardiovascular (CV) risk factor. Consequently, the decision on antihypertensive treatment has been in the focus of changing recommendations over the past decades, initially with higher accepted BP thresholds than those recommended by modern guidelines. However, recently published consensus statements have indicated that treatment goals should be less ambitious, as 'the lower the better' might not be applicable for ages >60 years and in uncomplicated hypertension.^{1 2} Moreover, the traditional definition of increased BP that warrants pharmacological treatment has been questioned since studies have suggested that elevated night-time BP, but not daily, office or self-measured BP, is a better marker of increased CV risk.³ In this population-based study, the authors examined incidence of CV disease among hypertensive participants stratified according to baseline systolic BP (SBP) with the lowest SBP stratum as a reference.

Methods

In the prospective cohort of the Atherosclerosis Risk in Communities Study, participants who met the hypertension criteria at baseline (sitting BP >140/90 mm Hg, or history of hypertension), without history of CV disease were identified. The participants were classified as low (reference, <120 mm Hg), standard (120–139 mm Hg) and elevated (>139 mm Hg) SBP, and, additionally, as those below and above 160 mm Hg. The primary outcome was a composite CV event of myocardial infarction, CV death, heart failure and ischaemic stroke. The authors clearly described the selection process and how the CV end points during follow-up were assessed. The main results were reported as HRs with 95% CIs.

Findings

A cohort of 5466 hypertensive participants (women, 55.9%; age, 55.5±5.7 years) was followed up for about 22 years. During this period, a total of 1622 CV events occurred. Among participants with low (22.7%), normal (33.6%) and elevated SBP (43.7% of all), proportions of those treated with

antihypertensive drugs at baseline were 99.4%, 89.8% and 46.1%, respectively. In the fully adjusted model, the elevated SBP conferred higher risk of incident CV disease (HR 1.46; 95% CI 1.26 to 1.69), whereas there was no difference between low and normal SBP (HR 1.00; 95% CI 0.85 to 1.17). Moreover, the age-adjusted risk of incident CV disease was distinctly higher among participants with SBP ≥160 mm Hg (HR 1.73; 95% CI 1.46 to 2.05) than in those with SBP 140–159 mm Hg (HR 1.16; 95% CI 1.01 to 1.34).

Commentary

This observational study emphasises the importance of identifying those hypertensive patients who have the highest probability to benefit from pharmacological intervention. It also offers a strong argument in the discussion about the higher treatment goals in uncomplicated hypertension. However, the main finding was not sufficiently highlighted by the authors. The clinically important increase in CV risk was observed only in a minor subset of patients with baseline SBP above 160 mm Hg. This group constituted approximately 25% of all participants with SBP >140 mm Hg who were, apart from that, less frequently treated as compared with the low-normal SBP group. It should be noted that the authors did not report the incidence of major CV events in normotensive participants, so the potential impact of hypertension with a satisfactory BP control on the development of CV disease could not be evaluated. In summary, when properly treated to the SBP threshold below 160 mm Hg, CV risk associated with uncomplicated hypertension did not substantially differ across increasing strata of office SBP. In contrast, hypertensive patients with untreated or treated baseline SBP above 160 mm Hg demonstrated significantly higher CV event incidence.

Implications for practice

This study provides a strong argument that former treatment goals in uncomplicated hypertension among middle-aged individuals should be re-evaluated. The possible advantage of lowering SBP below not only 120 mm Hg but also below 140 mm Hg in preventing CV disease has been questioned. Thus, the most recent recommendations for the elderly, suggesting SBP levels <150 mm Hg as the realistic treatment goal, can be extrapolated onto middle-aged individuals free from CV disease, that is, those with low-to-moderate CV risk. Moreover, the decision on whether or not to treat the increased office SBP above 160 mm Hg may be additionally supported by elevated night-time BP.

Competing interests None.

Ethics approval University of North Carolina.

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References

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