LETTER TO THE EDITOR

Targeting Systolic Blood Pressure: The Key to Controlling Combined Systolic/Diastolic Hypertension

To the Editor:

Hypertension is a strong and independent risk factor for cardiovascular morbidity and mortality. Treatment effectively prevents major complications such as stroke and myocardial infarction. Until recently worldwide practice was to prioritize the control of diastolic blood pressure (BP), as most interventional trials showing the benefit of drug therapy have taken diastolic BP as both an inclusion criterion and a target. However, the epidemiologic evidence indicates that systolic BP is the better predictor of cardiovascular morbidity and mortality.[1] Systolic control also provides significant protection against cardiovascular complications.[2] Large trials in elderly patients with isolated systolic hypertension prompted the formulation of international guidelines recommending the normalization of both systolic and diastolic BP,[3,4] currently to less than 140/90 mm Hg in all hypertensive patients, and lower still in the presence of concomitant diabetes or chronic renal disease. Notably, the excess risk of cardiovascular mortality found in treated hypertensive as compared with untreated normotensive individuals of the same age appears to be due mainly to persistently high systolic BP levels under treatment.[5]

Because there is more success in achieving diastolic than systolic control at both primary care level[6] and in interventional trials,[7] it is reasonable to assume that most patients in whom it has been possible to lower systolic BP to less than 140 mm Hg will have a diastolic BP less than 90 mm Hg. To verify this assumption we analyzed the data from the STRAtegies of Treatment in Hypertension: Evaluation (STRATHE) community study comparing different treatment strategies for uncomplicated essential hypertension.[8]

The STRATHE study was performed in France by 193 community physicians in 533 patients with a mean sitting systolic BP ≥160 mm Hg or mean diastolic BP ≥95 mm Hg after a 4-week single-blind placebo run-in. Of them, 470 had stage 2 hypertension (systolic BP ≥160 mm Hg or diastolic BP ≥100 mm Hg). The present analysis focuses on these patients as they met the criteria to receive a fixed dose combination as initial treatment in agreement with both European Society of Hypertension/European Society of Cardiology (ESH/ESC) and Joint National Committee (JNC) 7 guidelines.[3,4] After randomization to a fixed low-dose combination (perindopril/indapamide, 2 mg/0.625 mg, increased first to 3 mg/0.937 mg and later, if required, to 4 mg/1.25 mg [$n = 162$]), sequential monotherapy (atenolol 50 mg, followed by losartan 50 mg, and amlodipine 5 mg as needed [$n = 151$]), or stepped care (valsartan 40 mg, increased if necessary to 80 mg, then to valsartan 80 mg plus hydrochlorothiazide 12.5 mg if the target pressure was still not achieved [$n = 157$]), patients were treated double-blind for 9 months to a target BP <140/90 mm Hg. The three groups did not differ significantly in baseline age, body mass index, BP, and pulse pressure. All study tablets were encapsulated to conceal their identity and were taken once daily. The final visit took place at the end of month 9, or end of month 6 if the target BP had been reached. The primary end point was the BP normalization rate at final visit. Results were analyzed using the χ^2 test.

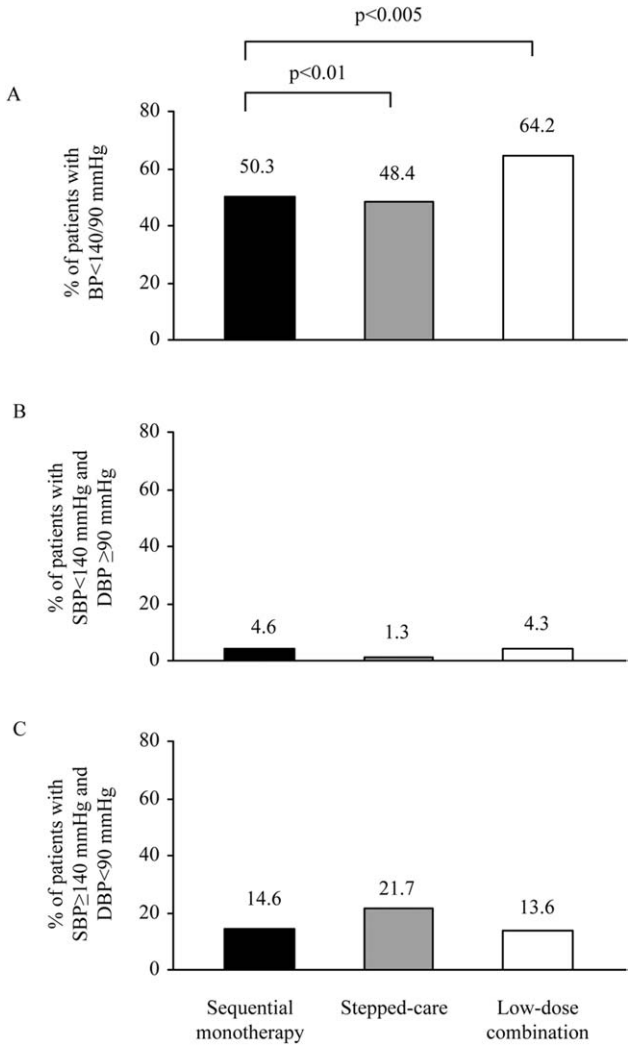

FIG. 1. Percentage of patients with stage 2 hypertension achieving the target blood pressure (BP) of <140/90 mm Hg (**A**) at final visit, a systolic BP (SBP) <140 mm Hg while retaining a diastolic BP (DBP) ≥90 mm Hg (**B**), and a DBP <90 mm Hg while retaining an SBP ≥140 mm Hg (**C**).

0895-7061/06/$32.00

Intention-to-treat analysis showed a significantly higher normalization rate with the low-dose combination (64.2%) than with sequential monotherapy (50.3%, $P = .004$) or stepped care (48.4%, $P = .01$). Only 3.4% of patients with a systolic BP <140 mm Hg retained a diastolic BP ≥90 mm Hg, whereas 16.6% of those with a diastolic BP <90 mm Hg retained a systolic BP ≥140 mm Hg (Fig. 1).

It has been difficult to determine whether the greater success reported in the control of diastolic versus systolic BP is grounded in pathophysiology or investigator bias. It is, for example, impossible to be sure to what extent physicians participating in interventional trials, including at the primary care level, endorse current recommendations to achieve tight systolic control. The fact that most interventional trials aimed to normalize diastolic but not necessarily systolic BP complicates interpretation of the apparently differing impact of antihypertensive treatment on each parameter.[7]

The STRATHE study gave equal priority to diastolic and systolic control. The results confirm the genuinely greater difficulty of achieving systolic control.[8] They reflect everyday practice in that they were obtained using current guidelines and standard treatment strategies and durations. The superior control achieved by the fixed low-dose perindopril/indapamide combination was due to a greater effect on systolic BP.

The key message of this analysis is that once systolic BP is brought to less than 140 mm Hg, diastolic BP is almost invariably <90 mm Hg, suggesting that the systolic/diastolic BP normalization rate would have been the same if the decision to change or intensify treatment had been based on systolic BP alone, instead of on both pressures as was the case. Can we now afford to abandon the measurement of diastolic BP as proposed in 1999 by Sever[9]? A confident positive answer must await the outcome of dedicated interventional trials. Evidence, however, already exists indicating that a high diastolic BP is not associated with an adverse prognosis if systolic BP is <140 mm Hg.[10]

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doi:10.1016/j.amjhyper.2006.03.012

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