European Society of Hypertension

Scientific Newsletter
Update on Hypertension Management

2016, 17, nr. 63

TREATMENT OF HIGH BLOOD PRESSURE IN ELDERLY AND OCTOGENARIANS

Sverre E. Kjeldsen [1], Aud-E. Stenehjem [1], Ingrid Os [1], Philippe Van de Borne [2]

[1] *Departments of Cardiology and Nephrology, Oslo University Hospital, Ullevål, and Faculty of Medicine, University of Oslo, Oslo, Norway*
[2] *Hôpital Erasme - ULB, Cliniques Universitaires de Bruxelles, Bruxelles, Belgium*

Epidemiology and pathophysiology

Hypertension in the elderly (above the age of 65 years) is an increasing public health concern [1]. Raised blood pressure (BP), especially systolic BP, confers a significant cardiovascular risk and should be actively treated in elderly patients. Even in the very old, (those above the age of 80 years) hypertension is a dominant risk factor; treatment prolongs life and prevents stroke and heart failure. The prevalence of hypertension approaches or even exceeds 50% in people aged 70 and above [2].

Most elderly people with hypertension have isolated systolic hypertension, defined as systolic BP greater than 140 mm Hg and diastolic BP less than 90 mm Hg [3, 4]. Systolic hypertension is a more potent risk factor than increases in diastolic BP.

Sluggish baroreceptor function and reduced cardiovascular sensitivity to catecholamines make the elderly more sensitive to natural or drug-induced falls in BP.

Diagnostic work-up and target-organ damage

There may be diagnostic problems in the elderly and very old people. 'Pseudo-hypertension' should be suspected in older patients who, despite high BP measurements, have minimal vascular damage in the retina and who experience inordinate postural dizziness despite cautious therapy. This is a condition in which there is a major discrepancy between intra-arterial and arm-cuff BPs, such that cuff BPs are falsely high [5, 6]. Pseudo-hypertension is caused by sclerotic changes in the media of the brachial artery and BP should be measured at the wrist or finger, locations otherwise not recommended for BP measurements.

BP readings are far more variable in the elderly, so more readings should be taken initially than for patients in the general population. BP should be measured in both the sitting and standing positions since there is a high frequency (as much as 30%) of a 20 mmHg or greater fall in BP in patients with a systolic BP over 160 mmHg. In these circumstances standing BP should be used to guide treatment decisions. Side-effects like dizziness and light-headedness should alert clinicians of possible over-treatment. Prevalence of clinically significant secondary hypertension is low (probably in the 1-5% range).

Ambulatory and home BPs (ABP and HBP)

Guidelines provide detailed suggestions regarding how and when to use ABP monitoring [7]. ABP has been found to be a significant predictor of cardiovascular morbidity, independent of office BP and other risk factors in elderly people and in those with isolated systolic hypertension [8, 9]. The white coat phenomenon, the difference between office BP and ABP, may be more pronounced in the elderly [10]. The 'reversed white coat phenomenon', when ABP is higher than office BP, has also been revealed in a substantial portion of older hypertensives [11]. However, the reproducibility and therefore the clinical utility of the white coat effect have been questioned [12].

In most people, BP falls at night. The nocturnal dip is less marked with increasing age [12-14] and disappears in centenarians [13].

In the Ohasama study, HBP had greater predictive power for mortality and stroke than screening BP [15], suggesting the potential usefulness of HBP measurements. However, physical and intellectual limitations, which are more evident in elderly subjects, may curtail more extensive use of HBP monitoring [7].

Total cardiovascular risk and when to start drug treatment

The same general rules apply to the whole hypertensive population [16-20]. Calculation of total cardiovascular risk using methods such as those proposed by the European Society of Hypertension–European Society of Cardiology Guidelines [21] is recommended also in the elderly (above 65 years) and old (above 80 years) people. The presence of other cardiovascular risk factors, in particular smoking and high cholesterol, diabetes mellitus, and/or target organ damage such as left ventricular hypertrophy, proteinuria and/or decreased renal function strengthen the indication for drug treatment of even mild hypertension [21]. The HYVET study showed that reducing systolic BP from approximately 170 to 140 mmHg in patients above the age of 80 years reduces mortality, stroke and heart failure [22]. Treatment of hypertension in very old patients should be restricted to those who are otherwise relatively fit and with at least grade II hypertension [22]. Further research is needed to clarify whether otherwise healthy people above the age of 80 years benefit from drug treatment of mild hypertension. Common concomitant diseases e.g. coronary heart disease, arrhythmia or heart failure may otherwise decide treatment indication, choice of antihypertensive drugs and intensity. Discontinuation or reductions of antihypertensive drugs may be indicated in severe ill and/or fragile patients [21].

Evidence based treatment

The 2013 ESH/ESC Guidelines [21] conclude that randomized controlled trials leave little doubt that elderly patients benefit from antihypertensive treatment in terms of reduced cardiovascular morbidity and mortality, irrespective of whether they have systolic–diastolic or isolated systolic hypertension. Benefits in elderly patients [22-25] have been shown with

representative agents from several classes such as diuretics, beta-blockers, calcium antagonists, angiotensin-converting enzyme inhibitors and angiotensin receptor blockers. Several studies [23, 26-28] have shown major benefits from treating elderly patients with isolated systolic hypertension and there is no evidence that different classes are differently effective in the younger vs. the older patient. The level of evidence table below is slightly modified from the 2013 ESH/ESC Guidelines [21].

Recommendations in the elderly (≥ 65 yrs.) and old (≥ 80 yrs.)	Class	Level
In elderly hypertensives with SBP ≥160 mmHg there is solid evidence to recommend reducing SBP to between 140 mmHg and 150 mmHg	I	A
In fit elderly patients less than 80 years old treatment may be considered at SBP ≥ 140 mmHg with a target SBP < 140 mmHg if treatment is well tolerated	IIb	C
In fit individuals older than 80 years with an initial SBP ≥ 160 mmHg it is recommended to reduce SBP to between 150 mmHg and 140 mmHg	I	B
In frail elderly patients, it is recommended to base treatment decisions on comorbidity and carefully monitor the effects of treatment	I	C
Continuation of well-tolerated antihypertensive treatment should be considered when a treated individual becomes octogenarian	IIa	C
All hypertensive agents are recommended and can be used in the elderly, although diuretics and calcium antagonists may be preferred in isolated systolic hypertension	I	A

Summary

There is little doubt from randomized controlled trials that elderly patients benefit from antihypertensive treatment in terms of reduced cardiovascular morbidity and mortality, whether they have systolic-diastolic or isolated systolic hypertension. Several randomized controlled trials of antihypertensive treatment versus placebo or no treatment in elderly (≥ 65 yrs.) and old (≥ 80 yrs.) patients with systolic-diastolic hypertension used a diuretic or a beta-blocker as first line therapy. In trials on isolated systolic hypertension first-line drugs consisted of a diuretic or a dihydropyridine calcium channel blocker. In all these trials active therapy was superior to placebo or no treatment. Other drug classes have only been used in comparative trials. Benefit has been shown in elderly and older patients for at least one representative agent of several drug classes, including diuretics, beta-blockers, calcium channel blockers, converting enzyme inhibitors and angiotensin receptor antagonists [21-28]. A more recent meta-analysis of all trials in the elderly and old people showed strong preventive effects on all the common complications [29].

Initiation of antihypertensive treatment in elderly and old patients should follow the general guidelines. Many patients will have other risk factors, target-organ damage and associated cardiovascular conditions, to which the choice of the first drug should be tailored. Furthermore, many patients will need two or more drugs to control blood pressure, particularly since it is often difficult to lower systolic pressure to below 140 mm Hg or 140-150 mmHg in the very old. Lower treatment target like in the recent SPRINT Study should only be considered if unattended automated office BP is used for measuring BP in the clinic [30].

Regarding the evidence in the frail octogenarians this problem is covered in the recent ESH/EUGMS (geriatric society) position paper. However, in short it is recommended to treat serious comorbidity and in many patients abstain from specific antihypertensive therapy [31].

REFERENCES

1. Dyer AR, Stamler J, Shekelle RB, Schoenberger JA, Farinaro E. Hypertension in the elderly. Med Clin North Am 1997; 61: 513–529.
2. Harris T, Cook EF, Kannel WB, Schatzkin A, Goldman L. Blood pressure experience and risk of cardiovascular disease in the elderly. Hypertension 1985; 7: 118–124.
3. Vokonas PS, Kannel WB, Cupples LA. Epidemiology and risk of hypertension in the elderly: the Framingham Study. J Hypertens 1988; 6 (suppl.1): S3–S9.
4. Chaundhry SI, Krumholz HM, Foody JM. Systolic hypertension in older persons. JAMA 2004; 292: 1074–1080.
5. Zweifler AJ, Shahab ST. Pseudohypertension: a new assessment. J Hypertens 1993; 11: 1–6.
6. National High Blood Pressure Education Program Working Group. Report of hypertension in the elderly. Hypertension 1994; 23: 275–285.
7. O'Brien E, Asmar R, Beilin L, et al. Practice guidelines of the European Society of Hypertension for clinic, ambulatory and self blood pressure measurement. J Hypertens 2005; 23: 697–701.
8. Björklund K, Lind L, Zethelius B, Berglund L, Lithell H. Prognostic significance of 24-h ambulatory blood pressure characteristics for cardiovascular morbidity in a population of elderly men. J Hypertens 2004; 22: 1691–1697.
9. Staessen J, Lutgarde T, Fagard R, et al. Predicting cardiovascular risk using conventional vs ambulatory blood pressure in older patients with systolic hypertension. JAMA 1999; 282: 539–546.
10. Wiinberg N, Höegholm A, Christensen HR, et al. 24-h ambulatory blood pressure in 352 normal Danish subjects, related to age and gender. Am J Hypertens 1995; 8: 978–986.
11. Wing LMH, Brown MA, Beilin LJ, Ryan P, Reid CM. Reverse white-coat hypertension in older hypertensives. J Hypertens 2002; 20: 636–644.
12. Stenehjem AE,Os I. Reproducibility of blood pressure variability, white-coat effect and dipping pattern in untreated, uncomplicated and newly diagnosed essential hypertension. Blood Press 2004; 13: 214–224.
13. Bertinieri G, Grassi G, Rossi P, et al. 24-hour blood pressure profile in centenarians. J Hypertens 2002; 20: 1765–1769.
14. O'Sullivan C, Duggan J, Atkins N, O'Brien E. Twenty-four ambulatory blood pressure in community-dwelling elderly men and women, aged 60–102 years. J Hypertens 2003; 21: 1641–1647.
15. Okhubo T, Asayama K, Kikuya M, et al. How many times should blood pressure be measured at home for better prediction of stroke risk? Ten-year follow-up results from the Ohasama study. J Hypertens 2004; 22: 1099–1104.
16. Thijs L, Fagard R, Lijnen P, et al. A meta-analysis of outcome trials in elderly hypertensives. J Hypertens 1992; 10: 1103–1109.
17. Ekbom T, Lindholm LH, Odén A, Dahlöf B, Hansson L, Wester P-O. A five-year prospective, observational study of the withdrawal of antihypertensive treatment in elderly people. J Int Med 1994; 235: 581–588.
18. Lund-Johansen P. Stopping antihypertensive drug therapy in the elderly people - a dangerous experiment? J Int Med 1994; 235: 577–579.
19. Lever AF, Ramsay LE. Treatment of hypertension in the elderly. J Hypertens 1995; 13: 571–579.
20. Lindholm LH, Johannesson M. Cost-benefit aspects of treatment of hypertension in the elderly. Blood Press 1995; 4 (suppl. 3): 11–14.
21. The Task Force. 2013 ESH/ESC Guidelines for the management of arterial hypertension. Blood Pressure 2013; 22: 193–278.
22. Beckett NS, Peters R, Fletcher AE, et al. for the HYVET Study Group. Treatment of hypertension in patients 80 years of age and older. New Engl J Med 2008; 358: 1887–1898.
23. SHEP Cooperative Research Group. Prevention of stroke by antihypertensive drug treatment in older persons with isolated systolic hypertension: final results of the Systolic Hypertension in the Elderly Program (SHEP). JAMA 1991; 265: 3255–3264.
24. Dahlöf B, Lindholm LH, Hansson L, Sherstén B, Ekbom T, Wester P-O. Morbidity and mortality in the Swedish Trial in Old Patients with Hypertension (STOP-Hypertension). Lancet 1991; 338: 1281–1285.
25. Thijs L, Fagard R, Lijnen P, et al. A meta-analysis of outcome trials in elderly hypertensives. J Hypertens 1992; 10: 1103–1109.
26. Staessen JA, Fagard R, Thijs L, et al. for the Systolic Hypertension in Europe (Syst-Eur) Trial Investigators. Randomised double-blind comparison of placebo and active treatment for older patients with isolated systolic hypertension. Lancet 1997; 350: 757–764.
27. Liu L, Wang JL, Gong L, Liu G, Staessen JA, for the Syst-China Collaborative Group. Comparison of active treatment and placebo in older Chinese patients with isolated systolic hypertension. J Hypertens 1998; 16: 1823–1829.
28. Staessen JA, Gasowski J, Wang JG, et al. risks of untreated and treated isolated systolic hypertension in the elderly: meta-analysis of outcome trials. Lancet 2000; 355: 865–872.
29. Briasoulis A, Agarwal V, Tousoulis D, Stefanadis C. Effects of antihypertensive treatment in patients over 65 years of age: a meta-analysis of randomized controlled studies. Heart 2014; 100: 317–323.
30. Kjeldsen SE, Lund-Johansen P, Nilsson P, Mancia G. Unattended blood pressure measurements in the Systolic Blood Pressure Intervention Trial. Implications for entry and achieved blood pressure values compared with other trials. Hypertension 2016; 67: 808–812.
31. Benetos A, Bulpitt CJ, Petrovic M, Ungar A, Agabiti Rosei E, Cherubini A, Redon J, Grodzicki T, Dominiczak A, Strandberg T, Mancia G. An expert opinion from the European Society of Hypertension-European Union Geriatric Medicine Society Working Group on the Management of Hypertension in Very Old, Frail Subjects. Hypertension 2016; 67:820–825.