Epidemiology and pathophysiology in elderly and old patients
Hypertension in the elderly (those over the age of 65 years) is an increasing public health concern [1]. Raised blood pressure, especially systolic pressure, confers a significant cardiovascular risk and should be actively treated in elderly patients, at least up to the age of 80 years. Even in the very old, (those above the age of 80 years) hypertension is a dominant risk factor, although it is yet unclear whether treatment prolongs life, even if it 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 pressure greater than 140 mm Hg and diastolic pressure less than 90 mm Hg [3, 4]. Systolic hypertension is a more potent risk factor than increases in diastolic pressure.

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

Diagnostic work-up of hypertension in the elderly and target-organ damage
There may be diagnostic problems in the elderly and very old people. ‘Pseudohypertension’ should be suspected in older patients who, despite high blood pressure 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 blood pressures, such that cuff pressures are falsely high [5, 6].

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

Ambulatory and home blood pressure (ABP and HBP)
The last guidelines for the management of hypertension 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 blood pressure and other risk factors in elderly subjects and those with isolated systolic hypertension [8, 9]. The white coat phenomenon, the difference between office blood pressure and ABP, may be more pronounced in the elderly [10]. The ‘reversed white coat phenomenon’, when ABP is higher than office blood pressure, 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, blood pressure falls at night. The nocturnal dip is less marked with increasing age [12–14] and disappears in centenarians [13].

There is a paucity of data on HBP in elderly subjects. In the Ohasama study, HBP had greater predictive power for mortality and stroke than screening blood pressure [15], suggesting the potential usefulness of HBP measurements. However, physical and intellectual limitations, which are more evident in elderly subjects, may curtail the usefulness of HBP measurements. However, physical and intellectual limitations, which are more evident in elderly subjects, may curtail the usefulness of HBP measurements.
sive lowering of blood pressure was associated with a low rate of cardiovascular events. Acetylsalicylic acid significantly reduced major cardiovascular events with the greatest benefit seen in all myocardial infarction. There was no effect on the incidence of stroke or fatal bleeds, but non-fatal major bleeds were twice as common. Likewise, the effect of atorvastatin was at least as strong in the elderly patients as in the younger patients in the lipid-lowering arm of the ASCOT study [45].

Treatment of hypertension in the very old

The HYVET-PILOT study [46] selected and randomised 1283 patients over the age of 80 years with a sustained blood pressure of 160–190/90–109 mm Hg in 10 European countries to one of three treatments: a thiazide-based regimen, an ACE inhibitor regime or no treatment. Diltiazem slow-release could be used as add-on therapy. Target blood pressure was <150/80 mm Hg and mean follow-up was 13 months. In the combined actively treated groups the reduction in stroke events was 53% and the reduction in stroke mortality was 43%. However, the estimate of total mortality suggested excess death from those on active therapy. The HYVET-PILOT study results supported the need for a main HYVET trial, which is ongoing.

Thus there are yet unresolved issues in the diagnosis and treatment of hypertension in very old subjects (those above the age of 80 years). However, while more outcome data from ongoing research is awaited, treatment of uncomplicated hypertension in the very old requires careful clinical judgements, including assessment of the many complicating factors discussed above [47].

Summary

There is little doubt from randomised 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. Whereas trials in the elderly usually include patients who are at least 60 years old, a recent meta-analysis concluded that fatal and non-fatal cardiovascular events combined were significantly reduced in participants aged 80 years and over in randomised controlled trials of antihypertensive drug treatment, but all-cause mortality was not reduced. The larger randomised controlled trials of antihypertensive treatment versus placebo or no treatment in elderly patients with systolic-diastolic hypertension used a diuretic or a beta-blocker as first line therapy. In trials on isolated systolic hypertension, treatment consisted of an ACE-inhibitor or 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 older patients for at least one representative agent of several drug classes, including diuretics, beta-blockers, calcium channel blockers, converting enzyme inhibitors and angiotensin II-receptor blockers.

The initiation of antihypertensive treatment in elderly 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 if it is often lower to systolic pressure to below 140 mm Hg.

References

2. Harris T, Cook EF, Kannel WB, Schatzkin A, Goldman L. Blood pressure experience and risk of cardiovascular disease. Blood pressure, particularly since it is often difficult to lower systolic pressure to below 140 mm Hg.