Editorial

Controlling hypertension in the elderly

Hypertension is best defined as the level of blood pressure above which treatment does more good than harm. This information comes from the results of randomized controlled trials, i.e. the evidence base. However, we do not know the level of blood pressure at which treatment fails to confer an overall benefit. Such a level is predicted to exist, as at lower levels of blood pressure, few gain by having cardiovascular events prevented yet all are at risk of the adverse effects of treatment. At the beginning of 2000, we know that at most ages it is worth treating a systolic blood pressure $\geq 160$ mmHg and/or a diastolic blood pressure $\geq 90$ mmHg. This has not prevented speculation that treatment should be started at say, a systolic pressure of 140–159 mmHg. Nevertheless caution must be expressed that adverse effects may outweigh advantages in certain groups, for example the very elderly ($> 80$ years) and those whose blood pressure is high when lying but low on standing. The same may apply to those with a high blood pressure when first seen but normal pressures thereafter; although transient hypertension, at least in men, still confers an excess cardiovascular risk. Obviously we should consider the over-80s further, assess blood pressure in the standing position, and determine the sustained level of blood pressure.

At age 65–79 years, experimental evidence suggests that a sustained systolic pressure $\geq 160$ mmHg should be treated irrespective of diastolic blood pressure. It is also probable (but not proven) that a diastolic pressure of $\geq 90$ mmHg should be treated irrespective of systolic pressure. The pressure should be measured at least three times on separate occasions over a period of time. The period of time should be at least 2 months, to agree with the evidence from the trials, and the blood pressure should be taken in the sitting position but with a standing systolic pressure of at least 140 mmHg. Thus we have an evidence base for treatment in subjects under age 80, but having decided on ‘treatment’, what should this be and what constitutes ‘control’ of hypertension?

Unlike the level of pressure at which we should treat, the level of blood pressure that we should achieve with treatment is unknown. For systolic pressure, there are no randomized controlled trial data. Epidemiological data suggest that levels of 125 mmHg should be achieved, but the guidelines are more conservative, suggesting $< 140$ mmHg. For diastolic blood pressure, the Hypertension Optimum Treatment (HOT) trial randomized patients to achieve a diastolic blood pressure of $< 90$ mmHg, $< 85$ mmHg or $< 80$ mmHg. In the event, the achieved blood pressures averaged 85.2, 83.2 and 81.1 mmHg for the three groups, respectively. Cardiac and stroke events did not differ with statistical significance between the three groups. The epidemiological data suggest that diastolic pressure should not be lowered below 85 mmHg, because of the J-shaped curve where ischaemic heart disease (IHD) mortality increases with a treated diastolic blood pressure of $\leq 85$ mmHg. However, the HOT trial does not support this and in the Systolic Hypertension in the Elderly Program (SHEP) trial, cardiac deaths were reduced when diastolic pressure was lowered from an average of 77 mmHg to 68 mmHg, albeit in the presence of a high systolic pressure. Most researchers have concluded that the J-shaped increase in mortality at lower pressure is not produced by the pressure, rather that the lower pressure is induced by coronary disease.

In the HOT trial, systolic pressure was reduced from an average of 170 mmHg to 140–144 mmHg. In the European Working Party on High Blood Pressure in the Elderly (EWPHE), SHEP and Systolic Hypertension in Europe (Syst-Eur) trials systolic pressures were reduced from means of 183, 170 and 174 mmHg, to 149, 144 and 151 mmHg, respectively. In these trials, the goal blood pressure was 140–160 mmHg (not 125 mmHg!) and even so about 30–50% of patients failed to achieve goal blood pressure. Moreover, this effect required two or more antihypertensive drugs in more than 40% of patients. We must conclude that with today’s pharmacological treatments, we are unlikely to reach ‘low’ goal pressures. Side-effects must be avoided, for example postural hypotension. The latter may be a greater problem in the elderly and be compounded by postprandial hypotension. These side-effects will certainly

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limit the numbers achieving goal blood pressure, even if assessed in the standing position, and may increase the default rates on treatment. In theory, we may strive to lower systolic pressure to below 125 mmHg and diastolic pressure to below 80 mmHg but in practice, especially in the elderly, we are likely to be disappointed. A possible pragmatic rule, valid only at the time of writing, is that the goal blood pressure in the elderly should be a standing systolic pressure <140 mmHg and diastolic <80 mmHg.

The evidence base for non-pharmacological treatments in the very elderly is very sparse, but unless the patient consumes large amounts of alcohol and stops, is grossly overweight and loses weight, or greatly reduces sodium intake, large reductions in pressure are unlikely. My personal view is that smoking must be stopped and that may require firm advice, nicotine patches or inhaler (the gum is difficult with false teeth), hypnotherapy or acupuncture. Ignore comments such as ‘grandfather’s sole remaining pleasure’ and ‘he will not live long enough to benefit’—if his expectation of life is so short, we are not going to treat his hypertension! Having dealt with smoking, the concepts of abstinence from alcohol, weight loss, sodium reduction and exercise may be introduced but expect to give drug treatment in the end. After all the rule of halves (or hopefully) thirds is still with us; if one third of hypertensives are unknown, one third of these are untreated and one third of these uncontrolled, then only 30% have good blood pressure control. We must be careful not to frighten patients away with difficult diets (low salt plus low sugar plus low fat plus high fibre) and to avoid side-effects if possible.

Assuming we have agreed on a goal pressure, how is it to be achieved? The selection of an antihypertensive drug has had more to do with marketing than science, but a new generation of trials have been designed that compare the different drugs in terms of morbidity and mortality outcomes. It is expected that these trials will provide valuable information. The forerunners of the modern trials comparing active treatments were the Medical Research Council (MRC) trials where patients were randomized 2:1:1 to placebo, diuretic and beta-blocker treatment. In the MRC trial in the elderly, patients treated with a beta-blocker fared badly, leading to the suggestion that beta-blockers should be avoided in this age group. However the STOP (Swedish Trial in Old Patients)-hypertension-2 trial has recently reported in which beta-blocker+diuretic treatment was compared with calcium channel blocker+beta blocker and angiotensin-converting-enzyme (ACE) inhibitor+diuretic treatment. No disadvantage was found for a beta-blocker. Two further trials are in progress to compare different treatments, ALLHAT and ASCOT, but in the meantime the drug employed would not appear very important. Obviously there are contra-indications, and these must be adhered to, similarly side-effects and quality-of-life issues may determine choice of drug. Some drugs are popularly used in certain circumstances, for example ACE inhibitors in diabetics. However, low-dose diuretics are inexpensive and successful, even in diabetic patients, as are calcium-channel blockers. The important consideration is to avoid specific drugs in certain conditions, e.g. beta blockers in asthmatics, calcium channel blockers in heart failure, diuretics in gout, and find the drug or combination of drugs that achieve goal blood pressure.

In the very elderly, over the age of 80, the picture is more confusing. First the epidemiology suggest that the higher the blood pressure, the lower the mortality, and second, there is currently no evidence base from randomized trials to support treatment. The epidemiological findings, for the elderly population as a whole, appear well substantiated, but this inverse relationship between blood pressure and mortality may simply be an extension of the J-shaped curve. In the over-80s, subjects with a low blood pressure may not only include those with a fibrotic myocardium following myocardial infarction, but those who have lost weight through cancer, dementia and other illnesses. No surprise, perhaps, that those with a high blood pressure are the fittest and survive well. Nevertheless, we need to know whether, with treatment, these fit subjects will live even longer. No trial, with the exception of the Hypertension in the Very Elderly (HYVET) pilot trial has been specifically targeted at the over-80s, however, a meta-analysis of subjects over the age of 80 entered into other trials showed some intriguing results. Strokes (fatal plus non-fatal) appeared to be reduced by active treatment, whereas total mortality tended to be increased. As discussed, there must be a blood pressure, or age (or some combination of pressure and age) that is not worth treating because the adverse effects outweigh the benefits. The problem of providing evidence for or against treatment is being addressed in the main HYVET trial. In the meantime, whom shall we treat? Firstly, severe hypertension is excluded from the HYVET trial, and systolic pressure of ≥200 mmHg or diastolic pressure ≥110 mmHg deserve treatment in the absence of an evidence base. Others exclusions indicate whom to treat: those with any degree of heart failure, angina, renal failure or (rarely) evidence of accelerated hypertension. For other patients, if you treat them they may avoid a stroke but not necessarily live any longer. The optimist may assume that, as all placebo-controlled trials in hypertension have shown overall benefit, so will trials in the very elderly; The pessimist, always wrong in the past, may not wish to provide pharmacological
intervention to fit survivors, many who have had mild hypertension tracking upwards for decades, without adverse consequences as yet.

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References


