What Should We Do About Mild Hypertension?

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The benefit of medication for the more severe degrees of hypertension is not disputed; the accelerated phase is relieved or avoided and so is hypertensive heart failure if due to raised pressure alone. Anti-hypertensive therapy will help if heart failure is precipitated by ischaemia and will substantially lower the risks of intracranial haemorrhage and aortic dissection and will also give significant but only partial protection against thrombotic stroke. Whether or not myocardial infarction is rendered less likely is still disputed.

With less severe hypertension the emphasis shifts to prevention rather than cure. It is far less clear whether the benefit of medication outweighs the possible discomforts and dangers, or justifies the trouble and expense.

Mild hypertension is always symptomless. Headache and dizziness may lead to measurement of blood pressure, but they are not related to pressure levels. Retinopathy reveals nearly normal vessels, for grade II retinopathy in the younger patient denotes sustained pressure elevation for months or years and carries an unfavourable prognosis implying that the hypertension is more than mild. The ECG will not show excessive voltage nor the T wave changes of left ventricular hertrophy. Evidence of renal disease will imply accompanying or underlying renal disease and the management of the patient is then primarily concerned with the renal lesion.

There are no precise cut-off points for blood pressure between normality and mild hypertension or between mild and more severe hypertension, but I suggest that repeated pressures exceeding 180/110 with the patient in a relaxed state indicate more than mild hypertension, while pressures greater than 150/100 should be considered abnormal.

Epidemiological studies leave little doubt that mild elevations of casual blood pressure readings imply an increased risk of death and disability from myocardial infarction and stroke[1] but there is no convincing evidence that medication to lower such pressures brings worthwhile benefit to all patients.

Two recently reported large-scale trials from Australia and the USA have attempted to estimate the benefit of medication in less severe hypertension. The Australian Trial[2] compared active with placebo tablets. Entry criteria were the absence of cardiovascular events and pressures in the range of systolic below 200 and diastolic phase 5 between 95 and 110. There were two initial visits and the mean of four readings was taken. Treatment was dispensed at the third visit and by that time 15 per cent were no longer considered hypertensive. Initial medication was with a thiazide diuretic, to which was added beta-blockade or methyldopa. If required, hydralazine or clonidine were third-line drugs. Pressure fall was on average 13 mm Hg in the treated and 7 mm Hg in the placebo group.

A total of 3,427 patients was entered and the results are shown in Table 1. Deaths from non-cardiovascular causes were identical in both groups, so it appeared that 10 deaths were postponed for at least the four years of the trial. Only six strokes seemed to have been prevented. The statistics of the medical care necessary to achieve this result are formidable, for 700 patient years of treatment were necessary to save one life. Even if only one tablet a day was used, this amounts to over a quarter of a million tablets.

In the American Trial[3], medication supervised in specialist hospital clinics was compared with treatment by the patient's own GP. Benefit in the hospital-treated group seemed easier to achieve (Table 2), for over a five-year period 60 lives appear to have been saved at a cost of

Table 1. Australian trial results[2].

|                  | Treated | Placebo |
|------------------|---------|---------|
| No. of patients  | 1,721   | 1,706   |
| Cardiovascular deaths | 25      | 35      |
| Non-fatal stroke  | 10      | 16      |

Table 2. American trial results [3]: mild group (diastolic blood pressure 90-104) treated for 5 years. Number of patient years of hospital treatment for each life saved = 325 years.

|                  | Hospital treated | GP 'treated' |
|------------------|------------------|--------------|
| No. of patients  | 3,903            | 3,922        |
| Deaths           | 231              | 291          |

323 patient years of treatment for each. Surprisingly, this proportional saving of life exceeded that found in more
severe hypertension. In both these trials there was an apparent small reduction in deaths from myocardial infarction.

The results of the British Medical Research Council's current trial are awaited, but preliminary data published after 1,800 patients had been entered[1] (Fig. 1) again show that there is an important fall in mean pressure in the placebo group. This seems to imply that a number of patients were only hypertensive in the circumstances of initial screening and short-term follow-up.

Three things about levels of blood pressure and death and handicap from cardiovascular disease are clear. The first is that cardiovascular events are commoner in subjects whose random blood pressures are elevated, and less common when pressures are lower, even down to very low levels. The second is that in some patients with high levels of pressure drug treatment conveys undoubted benefit. The third is that factors other than the level of blood pressure may be equally important. These include male sex, family history, cigarette smoking, social class, diet, lipid levels and, perhaps, psychological factors.

So many variables have to be assessed that each patient with modest elevation of blood pressure must be considered individually, for there is no proof that all need lifelong medication. As physicians, we should be as ready to prescribe cessation of cigarette smoking, good sense about diet (including its salt content) and well-judged physical exercise, as to prescribe beta-blockade. We also have to judge occupational stress.

This does not diminish the difficulty of deciding at what level of blood pressure to institute medication. It seems clear from everyone's personal experience and from placebo-controlled studies that patients found to have high pressure levels at initial screening may continue to be persistently and perhaps increasingly hypertensive if followed. In contrast, others may in time be found to be consistently normotensive in their ordinary lives. At least one study employing continuous intra-arterial measurement of blood pressure has shown individuals whose ambulatory blood pressure during waking hours is below 140/90, yet at clinics, or when approached with a sphygmomanometer cuff, blood pressure rises[4]. We must conclude that among those with higher than normal pressures at clinics or surgeries at least two populations exist; one is persistently hypertensive at most times of the day, while the other more often has a normal pressure. The therapeutic trials quoted give no evidence as to whether all classes of so-called hypertensives benefit equally from drugs. It would be entirely reasonable to assume that the consistently hypertensive require treatment and the more usually normotensive do not.

Thus, the first step in the management of mild hypertension should be to confirm its presence by a period of assessment. In this setting, blood pressure is better measured by a well-trained nurse than by most doctors, especially consultants, who tend to be awesome and almost always in a hurry. Serial readings that drift from perhaps 170/105 towards 150/90 over a three-month period allow one to monitor without treatment for months or years. The usefulness of home blood pressure measurements should not be overlooked. Sphygmonanometry can readily be taught, and spouses, siblings or neighbours can monitor blood pressure very satisfactorily in conditions devoid of stress. This is especially helpful in those with considerable variations of pressure in hospital clinics. If this trouble is taken to obtain valid readings over weeks or months a fairly clear picture of whether hypertension is established or possibly worsening will emerge, and the question of medication can be considered in the light of the patient's age and family history. Adjustment for age defies any precision, but clearly sustained levels of the order of 160/100 imply a greater risk to longevity and continued health at the age of 40 than at the age of 65. Systolic pressures are at least as important as diastolic and there is no justification for following contemporary habits and only quoting diastolic levels.

Present evidence suggests that it is prudent to advise men and women in the fifth and sixth decades to accept a trial of medication if their blood pressure is fairly consistently measured at a level of more than 160/100 mm Hg. The younger the patient and the more worrying the family history, the greater is the need to treat. The great majority of patients will find medication unobtrusive and acceptable. It is unlikely to call for more than one tablet each morning. If all the treatments taken seem to cause troublesome adverse effects, the patient and doctor may decide on a further period of surveillance without medication. If pressure falls quickly into the normal range and stays there, it is entirely sensible, after a period of a year or two, to cease therapy and monitor the blood pressure untreated until it rises again, even though the likelihood of permanent relief is small.

Nearly all physicians now choose either a beta adrenergic blocking drug or a thiazide diuretic as first choice of therapy. The advantage of both these drugs over methyl-dopa is that symptomatic postural hypotension is very
uncommon with either and troublesome lassitude is infrequent.

Beta-blocking drugs should not be used to treat mild hypertension if there is a history of airways obstruction. The risk of inducing heart failure would, however, be very low. The risk of serious adverse effects from beta-blockade is negligible. The one long-term risk is in those with peripheral arterial disease. Even if there is no clinical indication of impaired arterial supply, ischaemic lesions of the toes may occur and quickly progress to gangrene. Healing follows withdrawal of beta-blockade.

All these drugs may produce discomfort from Raynaud's phenomenon and beta-blockade may therefore be relatively intolerable in perhaps 5 per cent of patients. This troublesome symptom seems more common with propranolol than with oxprenolol, and a change of medication is worthwhile.

Other frequent complaints of patients who take tablets for hypertension are lassitude, diminished sexual power and muscle fatigue. Small-scale placebo-controlled trials suggest that none of these three is common with beta-blockade. Preliminary results of the large-scale MRC trial are now available[5]. Twice daily propranolol or twice daily bendrofluazide are compared with placebos. Adverse effects have been assessed by patient questionnaire and by withdrawals from treatment. Lassitude and impaired sexual function are significantly associated with beta-blockade therapy. Positive answers to the question of lassitude occur with almost equal frequency with beta-blockade and bendrofluazide but only once in 100 patient years of exposure. Impotence led to withdrawal of therapy once every 200 patient years of exposure to beta-blockade, but was four times more frequent with bendrofluazide—a totally unexpected finding. Thus, with rational doses of beta-blockers, there will rarely be conspicuous interference with normal life. The situation may be different in those engaged in heavy physical work.

Although muscle fatigue is not a positive finding in the MRC trial, Tudor Hart, whose practice includes a high proportion of manual workers, states in his textbook[6] that reduced exercise tolerance is often the most serious limiting factor in the use of beta-blockade, particularly for manual workers.

Diuretic therapy is almost equal in hypotensive potency to beta-blockade and has the advantage of very low cost: it has been generally supposed that the only unwanted effect of diuretic therapy is the occasional attack of gout. Nevertheless, withdrawals from therapy in the MRC trial were significantly more frequent with bendrofluazide than with placebo, for reasons of impotence, lethargy and dizziness with headache. The more serious long-term risks of diuretic therapy are biochemical. Thus, gout and impaired glucose tolerance led to withdrawal of therapy once in 100 patient years. Impairment of glucose tolerance must be the greatest worry of long-term diuretic therapy. Dollery and Murphy[7] found that their patients' fasting blood sugar had increased by an average of 28 mg per cent (1.55 mmol/litre) after 12-15 years of treatment with bendrofluazide, usually in a dose of 10 mg daily. At the end of this time approximately half the patients fulfilled the WHO definition of having diabetes.

The importance of reduction of serum potassium levels with diuretics is still not clear. Muscle weakness and fatigue are not likely to occur but the spectre of dangerous cardiac arrhythmia continues to be paraded.

In view of all these potential dangers the dose of the thiazide to be given needs more careful consideration. In a very useful study Tweeddale and his colleagues in Quebec[8] gave four doses of chlorthalidone double blind and in random order to 37 patients with moderately severe hypertension. The fall in pressure with 25, 50, 100 or 200 mg daily was statistically similar. A few patients achieved a greater fall with 200 mg than with 25 mg daily but in the authors' judgement the price in terms of increased biochemical disturbance was not usually justified. Falls in serum potassium and rises in uric acid were dose dependent. Random blood sugar measurements did not show a dose relationship.

We found no difference in the hypotensive effect of 5 mg and 10 mg of bendrofluazide added to beta-blockade[9]. Further large-scale, long-term trials are needed to determine how small the effective dose of thiazide can be, and whether small doses cause less impairment of glucose tolerance.

If, as seems likely, no more than 5 mg bendrofluazide daily is an adequate dose, very few patients should have a worrying fall in serum potassium. The mean fall in serum potassium caused by 10 mg daily of bendrofluazide was 0.60 mmol/litre in the MRC trial. We found that if the serum potassium falls, it does so in the first month and is unlikely to fall further with continued treatment[9]. This suggests that one check after a few weeks' therapy will identify the minority who are at risk. Both beta-blocking drugs and diuretics have been shown to induce minor changes in serum lipids but these do not at present seem to be of major importance[10, 11].

Conclusions

Decisions on treatment of mild hypertension should be made on an individual basis. The risk of harm increases pari passu with sustained levels of blood pressure and the first step is to decide at which point on the slope each patient should be placed. This requires a suitable period of observation without treatment which may be years rather than days. Readings of blood pressure when the patient is relaxed should be sought in clinic, surgery or home. Sustained hypertension, and particularly worsening hypertension, calls for medication that can be expected to bring benefit. Treatment with beta-blockers is probably to be preferred. One agent alone will usually suffice, but the chosen agent must be shown to be effective.

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Book Review

Infectious Diseases by Philip D. Welsby. MTP Press, Lancaster, 1981. Price £14.95.

Undergraduate teaching in infectious diseases may fragment when departments such as microbiology, general practice, immunology and paediatrics contribute their clinical or laboratory view. Now that the exanthemata and other contagions are less of a menace to public health in the UK, does the specialty merit teaching on its own, especially when taxing infective diseases are managed by clinicians working in the kidney transplant or neonatal intensive care units? (Infectious disease specialists might argue that this is precisely why their teaching is so necessary.) Nonetheless, infective disease causes much morbidity in the community and any physician should be confident in the diagnosis and management of commoner conditions and understand the background to infection and immunology. It is to the medical student and junior doctor who are, to quote Dr Welsby's infelicitous phrase, 'learning the Infectious Diseases Trade', that this book is addressed. This racy style first amuses but soon grated, reaching its nadir when stool flora, a sewer and a pretty girl are forced into one simile.

The book starts with basic principles of infections and infectious diseases and the first hundred pages deal with infection caused by the several types of organisms: bacterial, viral, fungal, protozoal and worms. The remainder is a discussion of diseases causing symptoms such as respiratory infections, jaundice, pyrexia and vomiting, and diarrhoea. The last three chapters consider prevention, practical procedures and the notification of infectious diseases—including a scheme for checking the health of tropical travellers. Each chapter has numerous clear tables and illustrations (black and white line drawings—no photographs or X-rays) and concludes with a few references and suggestions for further reading; the index is adequate.

The strengths of this book are its clarity and directness, for example, the differential diagnosis of large worms passed by untravelled British subjects, and the assessment of pyrexia of unknown origin. However, in a single-author book, repetition is unacceptable; examples are meningococcal meningitis, described in the sections on bacterial disease and infections of the nervous system, and whooping cough. Lists of antibiotics and exotic diseases are recognised traps in such books: Dr Welsby avoids them by breaking up the text into variable lengths and by frequent sub-headings. Disagreement is inevitable—especially concerning personal views on management. Epiglottitis causes much anxiety to junior medical staff and merits more than a few lines: the toxaemic illness and details of management could be described rather than wasting time looking (sic) for a respiratory 'whistle'. Table 29 displays the recipe for a cocktail of salt, baking soda, glucose and water for oral rehydration in children with vomiting and diarrhoea. This is the sort of recommendation which sets paediatricians and infectious diseases physicians squabbling. I will merely point out that there are prescribable electrolyte powders containing a fixed amount of salts which can be safely reconstituted by doctors, chemists and mothers; otherwise tap water will suffice. More discussion might have been given to opportunistic infections, especially those associated with intravascular catheters and other foreign bodies, and to prophylactic chemotherapy—other than for malaria. Hospital specialists and librarians will probably look to the larger books that Dr Welsby mentions in his introduction but for personal purchase by the medical student or junior doctor this book is warmly recommended.

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