

HYPERTENSION IN THE ELDERLY

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In many countries an increasing proportion of the patient population is elderly. With cardiovascular and cerebrovascular events accounting for the majority of deaths in the elderly the management of hypertension is a topic of considerable importance.

For the present discussion persons aged 65 and over may be arbitrarily defined as *elderly*. Blood pressure is a continuous variable and its attendant risks vary with the level of pressure. However, for this discussion, we will define hypertension in the elderly as a systolic pressure of 160 mm Hg or more, and diastolic pressure equal to or above 95 mm Hg (Korotkoff phase 5), or both.

It is generally agreed that hypertensive patients with accelerated or malignant hypertension benefit from antihypertensive therapy at all ages. However, the wisdom of treating mild and moderate hypertension in elderly patients has been questioned (1,2).

Many population surveys have demonstrated that systolic and diastolic pressures increase with age in both sexes, with a disproportionate rise in systolic pressure compared to diastolic pressure. The prevalence of hypertension in the elderly has been shown to range from 30 to 65 per cent (3, 4).

HYPERTENSION AND CARDIOVASCULAR RISK

Blood pressure is a major risk factor for cardiovascular disease in the elderly (5) (fig 1). Elevated systolic pressure even with low diastolic pressures is associated with a poor prognosis in the elderly (6). There is no evidence to suggest that elderly women tolerate hypertension better than men and the cardiovascular morbidity and mortality has been shown to be actually greater for women over 65 years than men (5). Six times as many hypertensive patients develop congestive heart failure as normotensive individuals, and systolic pressure is more important than diastolic pressure in this respect (7).

There appears to be a causal relationship between the level of blood pressure and the incidence of stroke, indeed no factor has been implicated more strongly than hypertension in the development of cerebrovascular accidents.

VALUE OF TREATMENT

There is evidence that lowering blood pressure in middle age and older people even after the appearance of target-organ involvement, reduces the cardiovascular morbidity and mortality substantially after a short period of treatment (8). Kannel and Gordon suggest that there is little advantage in waiting for the

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appearance of target organ involvement in elderly hypertensives before treating them because over a 20 year follow-up about 50% of men of all ages and 40% of women will develop cardiovascular disease (5).

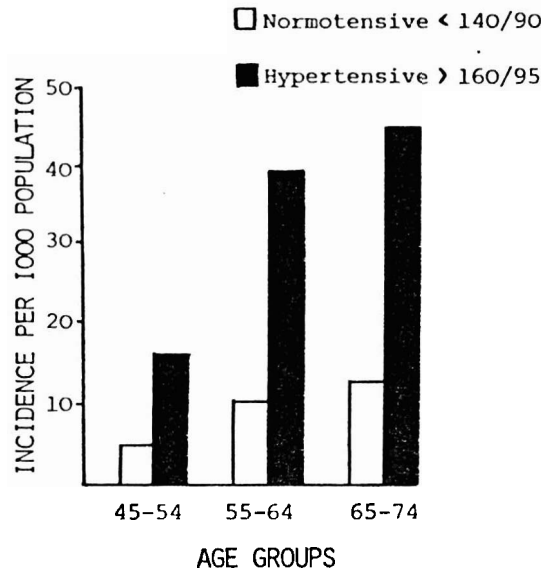


Figure 1. Risk of cardiovascular disease in relation to hypertension status and age (5). Kannel and Gordon, 1978.

The Veterans Administration Co-operative Study Group (V.A. Study) showed the benefits of controlling hypertension at any age (9, 10). The incidence of morbid events in the over 60 age group was 62.8% for the control group and 28.9% for the group on antihypertensive therapy. The incidence of morbid events for those under 50 years of age was 15.2% for the control group and 6.9% for the treated group (9) (fig 2). Analysis of the 21 placebo treated patients who had complications which required discontinuation of the protocol assigned treatment, showed that one-third of the patients whose diastolic pressures averaged 115 mm Hg through to 129 mm Hg were over 65 years of age (10).

The reduction of blood pressure in hypertensive patients surviving a stroke has been the subject of controversial debate with some workers advocating active treatment and others believing that reduction of blood pressure may increase the likelihood of further cerebral ischaemia and infarction. In the Hypertension-Stroke Co-operative Study Group (11) stroke survivors with elevated pressures were studied and there was no significant improvement in the rate of

stroke recurrence in patients who received antihypertensive therapy, but treatment did reduce the incidence of congestive heart failure. However, in patients aged 70 and over, there was a 10.5% incidence of stroke recurrence in the drug-treated group whereas 36 per cent of the placebo group had a second stroke. In another study (12), in patients with diastolic pressure in excess of 110 mm Hg, there was a recurrence rate of 20% in the treated group as opposed to 44% in the group not receiving treatment. However, in patients aged over 65 the result of treatment was not as impressive. Finally, Beevers et al, (1973) showed that 16% of patients whose blood pressure was well controlled had a second stroke, whereas in patients with poorly controlled blood pressure the recurrence rate was 55 per cent (13).

The main limiting factor of the V.A. Study in the present context is that there were very few patients over 60 and none over 75. The European Working Party study of Hypertension in the Elderly (EWPHE) is a prospective multicentre controlled trial of antihypertensive therapy in patients over 60 years of age with mild to moderate hypertension (14). To date, over 500 patients have been recruited in over 20 centres. Although it will be some time before definitive results are available it has been demonstrated that blood pressure can be significantly reduced with diuretics alone in the majority of patients, with acceptable levels of unwanted effects.

The conclusion from reviewing the literature is that reduction of blood pressure in moderate and severe hypertension in the elderly may prevent cerebrovascular incidents but the situation is less clear for mild hypertension.

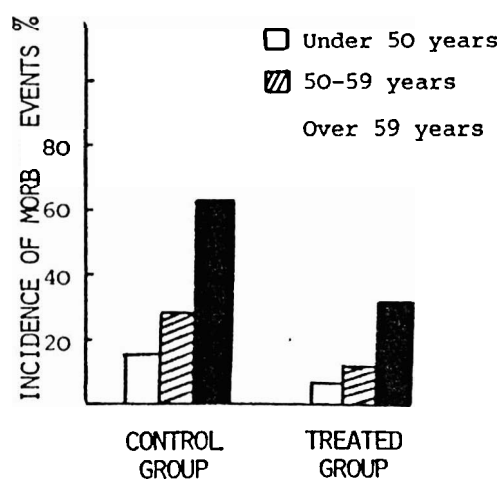


Figure 2. Incidence of morbid events with respect to age (9). (Veterans Administration Co-operative Study Group).

SYSTOLIC HYPERTENSION IN THE ELDERLY

In the elderly there is a disproportionately greater rise in systolic compared to diastolic pressure as the arteries lose their elasticity. Although hypertension in the elderly is usually predominantly systolic, isolated systolic hypertension (diastolic less than 90 mm Hg and systolic greater than 160 mm Hg) occurs fairly infrequently.

The prospective epidemiological data from Framingham demonstrate that cardiovascular morbidity and mortality are linked closely with both diastolic and systolic pressure elevations but more with systolic. In a prospective study of isolated systolic hypertension in the elderly, Colandrea et al (15) found it to be associated with increased morbidity and mortality from cardiovascular diseases.

Despite this evidence there is a general reluctance to ascribe importance to systolic hypertension in the elderly. Furthermore treatment of isolated systolic hypertension is often difficult.

TREATMENT OF HYPERTENSION IN THE ELDERLY

Surprisingly limited information is available on the appropriate use of antihypertensive drugs in the elderly. The kinetics of many drugs are altered (16) including propranolol. These differences may be due to decreased elimination rate or alteration in drug distribution in the elderly. The elderly appear to be more sensitive to the therapeutic and toxic effects of many drugs in normal doses. It is therefore important to prescribe cautiously in the elderly as many factors complicate the use of antihypertensive drugs.

Therapeutic misadventures such as those described by Jackson et al (1) are more likely in the elderly because of blunted homeostatic responses, inappropriate dosage, poor compliance and polypharmacy for a variety of diseases and symptoms. As treatment is usually lifelong, blood pressure reduction should be planned as a gentle and gradual process.

We try to avoid those drugs which cause central nervous system depression. Reserpine causes mental depression and methyldopa produces lassitude, drowsiness and decrease in mental acuity perhaps more so in the elderly and clonidine produces drowsiness and dry mouth. Adrenergic-blocking drugs should be avoided in the elderly because of the profound postural effect and the possible reduction in cardiac output.

Our choice therefore rests between a beta-adrenoceptor blocking drug and the thiazide diuretics. No comparison of these drugs has yet been made in the elderly. It is our present policy to select a beta-adrenoceptor blocking drug as the drug of first choice in elderly hypertensive patients unless there are specific contra-indications. We are biased in favour of a beta-blocker mainly because the side effects are relatively few and because they lack the metabolic problems associated with diuretics. But as

experience is limited to date cautious dosing is advised.

On the other hand there are advantages in starting therapy with a thiazide despite the attendant risks of hypokalemia, glucose intolerance, hyperuricaemia and the thiazides are cheap and are particularly useful in patients with poor left ventricular function and bronchospasm. In the EWPHE study diuretics have been shown to be effective in mild and moderate hypertension. If a satisfactory response is not achieved, a beta-adrenoceptor blocker or other drug may be added.

In summary, hypertension in the elderly poses many problems. Raised blood pressure, diastolic or systolic is associated with increased morbidity and mortality. Precise indications for treatment are not known but as the elderly often respond differently to younger patients the choice of drugs as well as dosage must be carefully individualized.

REFERENCES

1. Jackson, G., Pierscianowski, T.A., Mahon, W., Condon, J. (1976): *Lancet*, 2, 1317.
2. Fry, J. (1974): *Lancet*, 2, 431.
3. Kannel, W.B. and Gordon T. (1974): U.S. Govt. Printing Office, Washington, DC.
4. Chrysant, S.G., Frohlich, E.D., Papper, S.C. (1976): *Geriatrics*, 31, 101.
5. Kannel, W.B., and Gordon, T. (1978): *Bull. N.Y. Acad. Med.* 54, 573.
6. Kannel, W.B., Dawber, T.R., Sorlie, P. (1976): *Stroke*, 7, 327.
7. Kannel, W.B., Castelli, W.P., McNamara, P.M., McKee, P.A., Feinlab, M. (1972): *New Eng. J. Med.* 287, 781.
8. Freis, E.D. (1971): *Mod. Concepts Cardiovasc. Dis.* 40, 17.
9. Veterans Administration Co-operative Study Group on Antihypertensive Agents (1972): *Circulation*, 45, 991.
10. Veterans Administration Co-operative Study Group on Antihypertensive Agents (1967): *J.A.M.A.* 202, 1028.
11. Hypertension-Stroke Co-operative Study Group. (1974): *J.A.M.A.* 229, 409.
12. Carter, A.B., (1970): *Lancet*, 1, 485.
13. Beevers, D.G., Fairman, M.J., Hamilton, M., Harpur, J.E. (1973): *Lancet*, 1, 1407.
14. Amery, A. and de Schaepdrijver, A. (1973): *Clin. Sc. and Mod. Med.* 45, 71s.

- 15 Colandrea, M.A., Friedman, G.D., Nichaman, M.Z., Lynd, C.S. (1970):
Circulation, 41, 239.
- 16 O'Malley, K., Judge, T.G., Crooks, J. (1976):
Geriatric Clinical Pharmacology and Therapeutics, in Drug
Treatment (ed. G.S. Avery) p. 123-142. (Adis Press, Sydney).