The challenge of hypertension

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Hypertension is one of the few important cardiovascular diseases that can be effectively treated. The recently completed cooperative study by the Veterans Administration has provided conclusive evidence that the cardiovascular and renal complications specifically associated with even moderate hypertension can be greatly reduced or prevented by continuously lowering the blood pressure with antihypertensive agents. The effectiveness of such prophylaxis will, of course, depend on the extent of organ damage already present. If treatment is begun before vascular changes develop and is continuously maintained, there is every reason to believe that hypertensive complications can be generally eliminated.

The most useful drugs for treating patients with mild or moderate chronic hypertension are the thiazides, reserpine, hydralazine, and alpha-methyldopa. Regimens for severe hypertension (diastolic blood pressure averaging 115 mm Hg or higher) include first, combinations of thiazides, reserpine, and hydralazine. Fixed-dose combinations of these agents should be avoided, however, in the initial stages of dose adjustment, but may be substituted later if available in the doses found most effective in a particular patient. Second, a diuretic plus alpha-methyldopa is often effective in severe hypertension and is particularly useful in renal failure. The third and final regimen, a diuretic plus guanethidine, will often control the blood pressure when other antihypertensive agents fail. Guanethidine must be carefully titrated in each patient to avoid excessive orthostatic hypertension.

It is important to take a long-term view in treating hypertension. The physician's goal is to prevent cardiovascular complications that may arise ten or 20 years in the future. Reaching that goal requires the patient's cooperation, of course. And unfortunately, recent surveys indicate that approximately half the patients started on antihypertensive drug therapy had discontinued it by the time the surveys were made. Why do patients stop taking the drugs? In most instances the reason given suggested that the physician had not sufficiently impressed upon the patient the need for lifelong treatment.

Hypertension is asymptomatic until serious complications occur. In fact, patients often feel better when their blood pressures are uncontrolled than when they are reduced, especially if the antihypertensive drugs produce side effects. It is unrealistic to expect a patient to be well motivated unless he thoroughly understands that continuous treatment is necessary to prevent future serious complications. Also, side effects require the physician's careful attention if long-term adherence to the drug regimen is to be expected. Drug-related side effects must be differentiated from other, unrelated complaints; and if the side effects are sufficiently troublesome to threaten continued adherence to the regimen, a different drug should be substituted.

EFFECTS OF HIGH BLOOD PRESSURE ON THE CARDIOVASCULAR SYSTEM

SUBDIVISION		DIASTOLIC BLOOD PRESSURE mm Hg		
		130+	129 - 105	104 - 90
		RAPID DEVELOPMENT	GRADUAL DEVELOPMENT	
ARTERIOLES AND SMALL ARTERIES	intima and media, kidney, spleen, pancreas, brain	fibrinoid necrosis hyalinosis hyperplasia	hyalinosis hyperplasia	minimal hyalinosis and hyperplasia
	in brain	microaneurysms	microaneurysms > age 45	fewer microaneurysms > age 45
LARGE ARTERIES	aorta, coronary, carotid, cerebral, renal, iliac	distention fragmentation of elastica collagen proliferation	distention fragmentation of elastica collagen proliferation atheroma	distention fragmentation of elastica collagen proliferation atheroma
	in aorta	medial necrosis	less medial necrosis	no medial necrosis
HEART		dilatation failure	hypertrophy coronary atheroma dilatation failure myocardial infarction sudden death	hypertrophy coronary atheroma dilatation failure myocardial infarction sudden death

Patients vary so much in their responses to individual drugs, with respect to both effectiveness and side effects, that it is frequently necessary at first to use trial-and-error methods, testing one drug and then another. If the patient understands this need from the beginning, he will be more willing to cooperate, because he will realize that the physician is attempting to tailor a regimen that will be both effective and well tolerated over the long term. The attitude of the physician and his knowledge and skill in handling the drugs are all-important in obtaining this cooperation.

Hypertension predisposes to early development of atherosclerosis. Although therapy has been effective in preventing complications such as hemorrhagic strokes, nephrosclerosis, and congestive heart failure, it has been less successful in preventing atherosclerotic complications, particularly myocardial infarction and sudden death. Because of the increased susceptibility of the hypertensive patient to coronary artery disease, special attention should be paid to other risk factors. Elimination of cigarette smoking and dietary measures to lower an elevated serum cholesterol level are, therefore, important additional therapeutic measures.

The most difficult question for the physician to decide at present is whether lifelong antihypertensive treatment is justified in patients with mild or borderline hypertension. Much experimental evidence in animals, as well as pathologic observations in man, indicates that the cardiovascular damage associated with hypertension is secondary to elevated blood pressure per se. We also have definitive evidence that antihypertensive drug treatment prevents this vascular damage and reduces morbidity and mortality in male patients with diastolic blood pressures persistently in the range of 100 mm Hg or higher. It is reasonable to assume that the same holds true for women.

Life insurance statistics and other epidemiologic surveys indicate that average life expectancy is reduced with even slight elevations of systolic or diastolic blood pressure. It is tempting, therefore, to treat all patients who show any elevation above 139/89 mm Hg, particularly those less than 45 years of age. If every man or woman exhibiting a blood pressure of 140 mm Hg systolic or 90 mm Hg diastolic were started on lifetime therapy, approximately 30 million adults in the U.S. would be taking antihypertensive drugs. Does available evidence justify such a radical step—one that would tax existing medical resources?

Evidence indicates that the risk of cardiovascular complications in hypertension is directly related to the level of blood pressure—the milder the hypertension the lower the risk. Further, the often-quoted life insurance statistics relating borderline hypertension to reduction in life expectancy are apt to be misleading, because the results are based on a reading taken at one point in time.

Insurance statistics indicate, for example, that of a group of 100 men, 35 years of age, with a diastolic blood pressure of 90 mm Hg, a considerably larger number will be dead in 20 years than in a similar group with an initial diastolic blood pressure of 80 mm Hg. Such statistics do not tell us, however, that when the 100 men with initial diastolics of 90 reach age 45, some will have developed progressive hypertension with diastolics above 110 mm Hg. Nor do they tell us that in others diastolic pressures will have reverted to 80 mm Hg or less. The excess mortality rate may come almost entirely from the men whose blood pressures progress into the higher range.

Would it be justifiable to treat the men whose hypertension either would not progress or would revert spontaneously to normotensive levels? Obviously not. Drug therapy is not entirely innocuous, and it represents an additional expense and inconvenience to the patient. There is no reason, therefore, to rush into treatment when such patients are first seen. If there is no evidence of organic changes nothing is lost if the patients are followed for a year or two to determine which way the hypertension is moving.

If it is stable or on a downward trend, treatment should be withheld and the patient re-examined periodically. If, however, there is progression, with the diastolic persisting in the neighborhood of 100 mm Hg or more, or if there is any funduscopic, ECG, or renal evidence of hypertensive disease, treatment should then be instituted without further delay.

When there is a family history of hypertension with resulting cardiovascular complications, the chances are great that the patient is destined to follow the family pattern. These patients should be treated earlier than those without such a history.

A final consideration is the workload the physician must assume in the long-term treatment of a disease as ubiquitous as essential hypertension. Allied health personnel should be utilized to the fullest possible extent in routine follow-up. They can be trained to interview the patient, record blood pressure, and renew prescriptions for medication. The physician can be consulted when there is a need to modify the therapeutic regimen.

Local health agencies such as the heart association can be relied on to provide information about the nature of hypertension and its relationship to cardiovascular disease, emphasizing the importance of treatment in the prevention of future complications. Through such a division of labor, the physician will be able to concentrate his efforts on those aspects of medical management that require his special knowledge and skills. ₹

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