

Hypertensive Patients with Diabetes

Compared with its 25% prevalence in the general adult population, hypertension is present in 75% of patients with diabetes and is a major factor contributing to excessive risk of myocardial infarction, stroke, heart failure, microvascular complications, and diabetic nephropathy progressing to end-stage renal disease. The Action to Control Cardiovascular Risk in Diabetes blood pressure trial (ACCORD BP) failed to show reduced overall mortality or cardiovascular mortality from lowering the systolic BP to less than 120 mm Hg in patients with type 2 diabetes mellitus. However, the risk of stroke was reduced by 60% in these patients. The findings from the ACCORD trial have led to revised European and British hypertension guidelines increasing the target BP goal from 130/80 mm Hg to 140/90 mm Hg in most diabetic patients. However, the benefits of lowering systolic BP to less than 130 mm Hg in reducing the risk of stroke in diabetics and nondiabetic patients with high cardiovascular risks remains to be further determined. An ACEI or ARB plus a CCB is an excellent combination to treat hypertension in patients with diabetes. Thiazide diuretics and standard β -blockers exacerbate glucose intolerance, whereas the vasodilating β -blockers such as carvedilol and nebivolol have neutral or possibly beneficial effects.

Hypertensive Patients with Coronary Artery Disease

To lower myocardial oxygen demands in patients with coronary artery disease, the antihypertensive regimen should reduce BP without causing reflex tachycardia. For this reason, a β -blocker is often prescribed in conjunction with a dihydropyridine CCB such as amlodipine. β -Blockers are indicated for patients with hypertension who have sustained a myocardial infarction and for most patients with chronic heart failure. ACEIs are indicated for almost all patients with left ventricular systolic dysfunction and may be considered after myocardial infarction even in the absence

of ventricular dysfunction. Among patients with stable coronary artery disease, a cardioprotective effect of ACE inhibition has also been demonstrated in those with moderate cardiovascular risk profiles but not in those with lower risk profiles.

Isolated Systolic Hypertension in Older Adults

In developed countries, systolic pressure rises progressively with age; if individuals live long enough, then almost all (>90%) develop hypertension. Diastolic pressure rises until the age of 50 years and decreases thereafter, producing a progressive rise in pulse pressure (i.e., systolic pressure minus diastolic pressure) (Fig. 12-12).

Different hemodynamic faults underlie hypertension in younger and older persons. Patients who develop hypertension before 50 years of age typically have *combined systolic and diastolic hypertension*: systolic pressure greater than 140 mm Hg and diastolic pressure greater than 90 mm Hg. The main hemodynamic fault is vasoconstriction at the level of the resistance arterioles. In contrast, most patients who develop hypertension after 50 years of age have *isolated systolic hypertension*: systolic pressure greater than 140 mm Hg but diastolic pressure lower than 90 mm Hg (often <80 mm Hg). In isolated systolic hypertension, the primary hemodynamic fault is decreased distensibility of the aorta and other large conduit arteries (see Fig. 12-12). Collagen replaces elastin in the elastic lamina of the aorta, an age-dependent process that is accelerated by atherosclerosis and hypertension. The cardiovascular risk associated with isolated systolic hypertension is related to pulsatility, the repetitive pounding of the blood vessels with each cardiac cycle and a more rapid return of the arterial pulse wave from the periphery, both begetting more systolic hypertension. In the United States and Europe, the majority of uncontrolled hypertension occurs in older patients with isolated systolic hypertension. A BP of 160/60 mm Hg (pulse pressure, 100 mm Hg) carries twice the

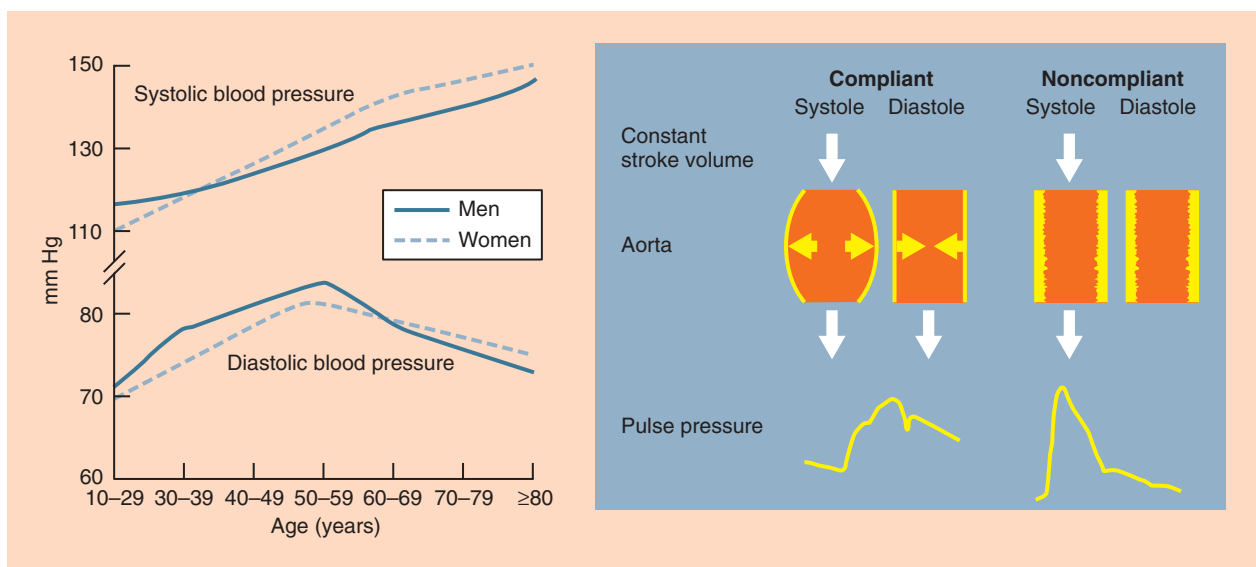


FIGURE 12-12 Age-dependent changes in systolic and diastolic blood pressure in the United States (left). Schematic diagram explains the relation between aortic compliance and pulse pressure (right). (Left, From Burt V, Whelton P, Rocella EJ, et al: Prevalence of hypertension in the U.S. adult population: results from the Third National Health and Nutrition Examination Survey, 1988–1991, *Hypertension* 25:305–313, 1995; Right, Courtesy Dr. Stanley Franklin, University of California, Irvine, Calif.)