INTRODUCTION

According to the Third National Health and Nutrition Examination Survey (1988–1994), 20.4% of the US population had an elevated blood pressure (BP >140/90 mmHg), and 14.2% of the US population had a frankly elevated BP (≥160/95 mmHg) (1). Hypertension prevalence was higher in African Americans than in Caucasians and in males than in females, and the prevalence increased with increasing age. Interestingly, the rate of rise of the BP correlated with the initial BP, with faster rates of rise seen in those patients with an elevated initial BP (2).

Although essential hypertension remains by far the most common form of hypertension, those with secondary hypertension can represent between 10% and 20% of the hypertensive population. Renovascular causes are the most commonly identifiable in this group.
Comparison between studies is hampered by differences in grouping according to age (by decade or arbitrary groups) and definition of hypertension (particularly in the older studies). Danielson and Dammstrom (3) examined 1000 consecutive patients between 20 and 70 years of age in the Hypertension Unit of their hospital in Sweden. They defined hypertension as greater than 160/95 mmHg (for patients under 40 years of age), 170/105 mmHg (for patients between 40 and 60 years of age), and 180/110 mmHg. Of these individuals, they identified 47 patients with secondary causes (34 patients with renal and 13 patients with endocrine causes of hypertension). Interestingly, of the 13 patients identified as having an endocrine cause of hypertension, 8 were felt to be hypertensive secondary to use of oral contraceptives, there was 1 patient with acromegaly, 1 with primary hyperaldosteronism, 1 with Cushing’s syndrome, and 2 with pheochromocytoma.

In a study by Anderson et al. (4), 4429 patients were evaluated at the State University of New York Syracuse for secondary causes of hypertension and how the prevalence of these diseases varied with age. The evaluation included a basal metabolic panel, thyroid function tests, stimulated plasma renin activity (PRA), BP response to an angiotensin II (Ang II) receptor antagonist (saralasin), plasma catecholamines and cortisol, and measurement of aldosterone after saline infusion. If any of these screening tests were abnormal, more comprehensive testing was done. Interestingly, these investigators found that the incidence of secondary hypertension increased with age (see Fig. 1), bringing into question the old maxim of only evaluating younger patients for secondary causes of hypertension. Overall, 10.2% of patients had an identifiable cause for their hypertension (see Fig. 2A,B) of which the most common causes were renal, including renovascular hypertension (3.1%) and an elevated serum creatinine (>2 mg/dL in 1.8% of patients), and endocrine causes, including primary hypothyroidism (3%), primary aldosteronism (1.4%), Cushing’s syndrome (0.5%), and pheochromocytoma (0.3%) (4).

Multiple endocrine conditions can result in an elevation in BP. The prevalence of many endocrine problems, such as type 2 diabetes mellitus and primary hyperparathyroidism, increases with age, as does hypertension. So, sometimes causality is not clear-cut. In other cases, even when there is clear causality between an endocrine condition and hypertension, the mechanism responsible for development of the elevation in BP is not known. In addition, the prevalence of some conditions varies depending on how elderly is defined (Fig. 1). This review is limited to the more common endocrine conditions and does not discuss all endocrine conditions that result in hypertension. For example, elevations in growth hormone (acromegaly) result in hypertension, but the incidence