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Q: Is hypertension a frequent manifestation of thyroid disease? Which clinical clues suggest hypertension in persons with thyroid dysfunction?  
A: The prevalence of hypertension among patients with hypothyroidism is approximately 3%. Hypertension is much more frequently associated with thyrotoxicosis (hyperthyroidism); the prevalence is estimated at 20% to 30%. Thyrotoxicosis. In patients with this condition, systolic pressures are typically elevated and diastolic pressures are often low, which results in a widened pulse pressure. These findings are attributable to increased cardiac output, stroke volume, heart rate, and cardiac contractility. Other manifestations of thyrotoxicosis are usually readily apparent; they include exophthalmos, nervousness, emotional lability, heat intolerance, and excessive perspiration. Palpitations, weight loss despite increased appetite, diarrhea, fatigue, and insomnia may also be observed. Anginal symptoms occur occasionally. The thyroid gland is usually palpably enlarged; however, it is normal size or smaller in about 40% of elderly patients. A discrete nodule or multiple nodules may not be readily apparent. Low levels of thyroid-secreting hormone (TSH) confirm the diagnosis. Appropriate therapy with restoration of normal thyroid function usually leads to normalization of blood pressure, particularly in younger patients. Hypothyroidism. In patients with hypothyroidism, both systolic and diastolic pressures are elevated; the severity of the thyroid disorder seems to correlate with the increase in diastolic pressure. The onset of hypothyroidism may be subtle and unrecognized for a prolonged period; therefore, elevated diastolic blood pressure may represent a valuable clinical clue in older persons, in whom systolic hypertension typically predominates. Other clinical manifestations include lethargy and decreased activity tolerance, dry skin, cold intolerance, constipation, intellectual impairment, and hoarseness. Typically, the thyroid gland is not enlarged, although a goiter may be readily palpable. The diagnosis is easily confirmed with measurement of serum TSH, which is elevated in 95% of cases. Endocrine and cardiovascular changes in thyroid disorders. The Table lists changes observed in both hyperthyroidism and hypothyroidism. Although many symptoms of thyrotoxicosis can be controlled with β-adrenergic blockers, catecholamine levels are usually normal or even decreased. Despite the fact that the activity of the renin-angiotensin-aldosterone (RAA) system is increased in patients with thyrotoxicosis, angiotensin-converting enzyme inhibitors and angiotensin II receptor blockers do not always reduce blood pressure. Thus, the role of the RAA system in hypertension associated with thyrotoxicosis remains to be defined. In addition, because of the hyperdynamic circulation, peripheral vascular resistance tends to decline in thyrotoxicosis. This may help explain some of the hemodynamic changes. In contrast, patients with hypothyroidism have increased catecholamine levels and a decreased density of β-adrenergic tissue receptor activity. One hypothesis is that the reduction in β-adrenergic activity leads to increased α-adrenergic responses, which may explain the increased peripheral vascular resistance and hypertension. The reduced activity of the RAA system in hypothyroidism suggests that this system plays only a small role in concomitant hypertension.  

Treatment. Initial management of hypertension resulting from hyperthyroidism includes a β-adrenergic blocker to control blood pressure and other symptoms. Subsequent therapy is cause-specific. The usual treatment of patients with autoimmune hyperthyroidism (Grave disease) is ablation of the thyroid gland with radioactive sodium iodide (131I). In those with a multinodular goiter (Plumber disease), ablation therapy is usually followed by subtotal thyroidectomy. Always consider subacute thyroiditis in the initial differential; this disorder can be effectively treated with short-term β-blocker therapy. The treatment of choice in hypothyroidism is levothyroxine replacement therapy, with gradual titration to a target dose. A smaller initial dose and more gradual titration are recommended for older patients, particularly those with cardiac disease.