Quiz of the Month

Answer
The finding of hypertension and hypokalemia in a nonedematous patient not taking a diuretic or consuming large amounts of natural licorice strongly suggests primary aldosteronism. With this as the initial diagnosis, peripheral vein renin and aldosterone are useful as screening tests. This patient’s renin was 20 ng/ml/h on an unrestricted diet (normal 1-3 ng/ml/h). His aldosterone was 33 ng/dl (normal 5-30 upright). The finding of a markedly elevated peripheral vein renin excludes the diagnosis of primary aldosteronism. The slightly elevated aldosterone signifies severe secondary aldosteronism when the inhibitory effect of hypokalemia on aldosterone synthesis and release is considered. Secondary aldosteronism and hypokalemia with untreated hypertension is found in patients with malignant hypertension, a syndrome this patient does not have, and in some patients with renal artery stenosis. The latter is now the working diagnosis.

The definitive test to detect the presence of renal artery stenosis is, of course, renal arteriography. The finding of a normal renal arteriogram with this story strongly suggests the diagnosis of a renin-producing tumor, i.e., primary reninism. While a tumor blush is seen in some patients with this disease, some of these tumors may not be seen with renal arteriography.

The diagnosis of this disease can be confirmed by renin measurement of blood obtained by renal vein catheterization. In most patients the renin activity in renal venous blood from the affected kidney will be much higher than in that from the contralateral kidney. Treatment of this disease is removal of the kidney containing the tumor. The tumor is usually a hemangio-pericytoma arising from the juxtaglomerular apparatus. It produces large amounts of renin. The syndrome has also been reported in patients with Wilm’s tumors and with adenocarcinoma of the kidney. Renin-secreting tumors of the lung, pancreas, and ovary also have been reported. Since these tumors have been found to produce large amounts of prorenin, plasma measurement of inactive renin may be useful in the diagnosis of these lesions.

References