

IMAGES IN INTERVENTION

An Unusual Cause of Iatrogenic Hypertension



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A 26-year-old woman was referred for management of resistant hypertension after admission for hypertensive emergency. Her past medical history was notable for attention-deficit/hyperactivity disorder and a motor vehicle accident 6 years before presentation that was complicated by subdural hematoma and provoked deep venous

thrombosis requiring placement of an inferior vena cava (IVC) filter. During her hospital admission, the patient was found to have a headache, acute kidney injury, and proteinuria in the setting of hypertensive emergency. In addition, the patient was found to be hypokalemic. Her antihypertensive agents were progressively titrated to include labetalol, amlodipine,

FIGURE 1 Magnetic Resonance Angiography



3-dimensional reconstruction from magnetic resonance angiography showing severe stenosis in the midportion of the right renal artery (**white arrow**).

FIGURE 2 Digital Subtraction Angiography of the Right Renal Artery



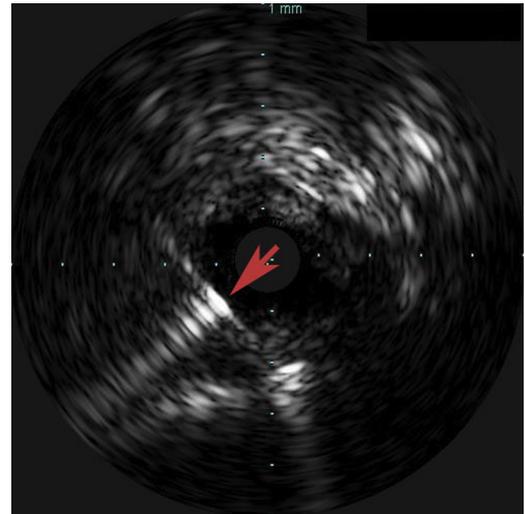
Digital subtraction angiography of the right renal artery showing severe stenosis in the right renal artery.

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FIGURE 3 Invasive Angiography of the Right Renal Artery

The relationship of the inferior vena cava filter prong to the right renal artery is shown, suggesting external compression of the artery.

FIGURE 4 Intravascular Ultrasound of the Right Renal Artery

Intravascular ultrasound image showing the metallic prong encroaching into the media of the renal artery (red arrow).

and spironolactone. Renal artery ultrasound revealed normal velocities in the right renal artery, with dampened, monophasic, and turbulent Doppler waveforms suggestive of renal artery atherosclerotic disease. The patient was followed with nephrology as an outpatient and was found to have elevated plasma renin of 32.8 $\mu\text{g}/\text{l}/\text{h}$ (normal range: 0.8 to 5.8 $\mu\text{g}/\text{l}/\text{h}$). Due to suspicion for renovascular hypertension, magnetic resonance angiography was pursued, which demonstrated severe stenosis of the midportion of the right renal artery with associated atrophy of the kidney (Figure 1). The left renal arterial system was normal. Invasive angiography was pursued and demonstrated a high-grade stenosis in the midportion of the right

renal artery (Figures 2 and 3). Stenosis was found to be secondary to extrinsic compression by a prong of the IVC filter (Figure 3). Intravascular ultrasound imaging demonstrated that the prong of the IVC filter had migrated into the media of the renal artery with resultant high-grade stenosis due to marked intimal proliferation (Figure 4). The patient was subsequently referred for surgical removal of the filter and vascular reconstruction of the renal artery.

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