Aortic Coarctation - Diagnosis by Renal Artery Doppler

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History
14 year old female with hypertension presents for renal artery Doppler.

Diagnosis
Aortic Coarctation

Discussion
Normal spectral waveforms of the aorta and renal arteries show sharp antegrade acceleration during systole followed by rapid deceleration during diastole. Waveforms beyond a stenosis show dampening of velocities with delayed peak; vascular compliance/impedance, cardiac output, vessel diameter and tortuosity can also affect waveforms distal to the stenosis. In this case, since parvus tardus waveforms were present in the abdominal aorta and renal arteries, a stenosis proximal to the abdominal aorta must be present and differential considerations are limited to include aortic valve stenosis, congenital aortic coarctation, middle aortic syndrome, and less likely Tayayasu arteritis, neurofibromatosis and tuberous sclerosis.

Findings
US-Images from renal artery Doppler examination show parvus tardus waveforms in both renal arteries but also the suprarenal abdominal aorta.
MR-subsequently 2D and 3D images confirm aortic coarctation and compensatory enlargement of internal mammary and paraspinal collateral vessels.

Reference
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