

Aortic coarctation disclosed in a middle-aged hypertensive patient by tardus parvus waveform in renal Doppler ultrasonography

Koarktacja aorty wykryta u pacjentki z nadciśnieniem tętniczym po stwierdzeniu nieprawidłowego widma przepływu w ultrasonograficznym badaniu dopplerowskim tętnic nerkowych

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A 54-year-old female was referred for investigation of long-lasting resistant hypertension. Arterial hypertension had been diagnosed 12 years earlier. There was no family history of hypertension. The patient had given birth to one child and the pregnancy had been uneventful. She denied any shortness of breath, chest pain, and intermittent claudication. In physical examination blood pressure was 170/70 mm Hg, equal on both arms, there was no murmur over the heart, and body mass index was 16.5 kg/m². The ankle-brachial index (performed after the diagnosis had already been established) was normal. Serum creatinine was 93.4 μmol/L (eGFR 58 mL/min). Echocardiography showed a hypertrophic left ventricle and no significant valvular abnormalities. Renal Doppler ultrasound examinations were performed to exclude renovascular hypertension. The study revealed bilateral tardus parvus waveform pattern (smaller difference between peak systolic and end-diastolic velocities, prolonged acceleration time), without any local abnormalities in colour Doppler, and increase of velocity compatible with renal artery stenosis (Fig. 1). The abdominal aorta was narrow at the level of the renal arteries (8–9 mm), and the spectral tracings suggested a more proximal obstacle (Fig. 2). A chest and abdominal computed tomography angiogram (CTA) was performed to evaluate aorta and renal arteries. CTA demonstrated a 7-mm-long occlusion of the aorta 11 mm distally to the origin of the left subclavian artery, the presence of collateral vessels, and internal mammary arteries anastomosing to inferior epigastric arteries (Fig. 3). Both renal arteries were patent, non-stenotic, and of normal diameter. The patient declined surgical treatment and was discharged home. Despite taking multiple antihypertensive drugs, her blood pressure remained elevated. Coarctation of the aorta (CoA) is an uncommon cause of hypertension in adults but should be taken into consideration as a cause of secondary hypertension regardless of the age of the patient. Renal Doppler ultrasonography is a frequently used tool to evaluate resistant hypertension. The tardus parvus pattern in renal artery is usually connected with the presence of severe renal artery stenosis, but if such an abnormal waveform pattern is demonstrated bilaterally together with corresponding abnormalities in the abdominal aorta, aortic stenosis, CoA, or middle-aortic syndrome must be excluded.

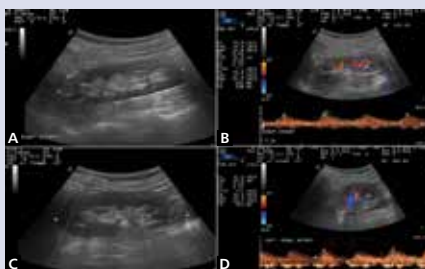


Figure 1. Both kidneys of normal size (A, C). Tardus parvus waveform pattern detected in interlobar arteries in the right (B) and left (D) kidney

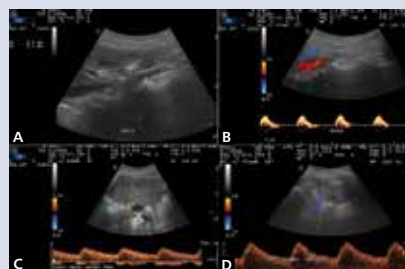


Figure 2. Abdominal aorta just distally to origin of renal arteries (A). Spectral tracking shows significantly prolonged acceleration time (B). Tardus parvus waveform is already present in the proximal part of right (C) and left (D) renal arteries

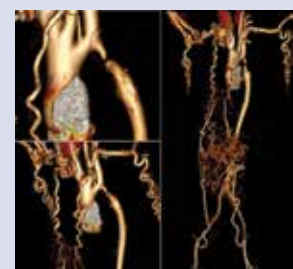


Figure 3. Computed tomography angiogram — 3-dimensional volume rendering. Coarctation of the aorta. Aorta is occluded 11 mm distally to the origin of left subclavian artery

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