

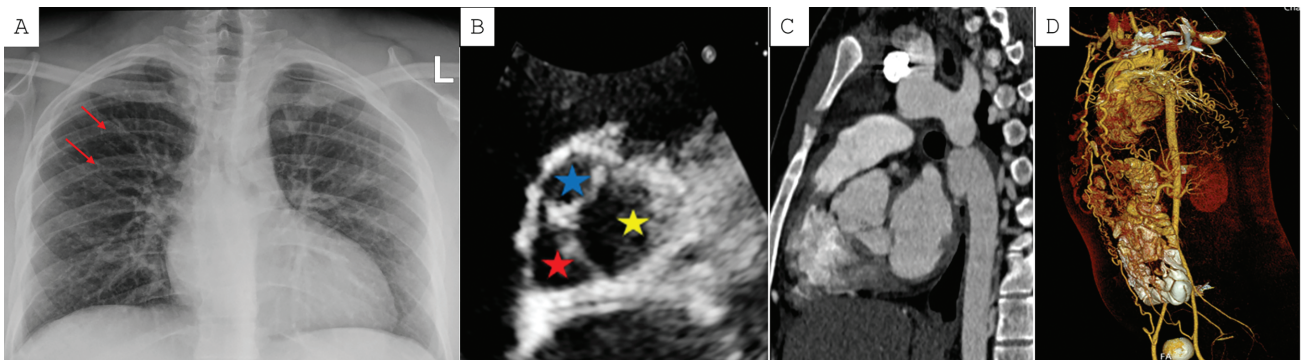
Images in Medicine

A cardiac cause of refractory hypertension: Coarctation of the aorta

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A 21-year-old male university student was referred to our cardiology department for uncontrolled hypertension despite treatment with three antihypertensive agents. He was otherwise asymptomatic. Clinical examination revealed no radio-radial delay, but a radiofemoral delay was present. On cardiac auscultation, he had an aortic ejection click and a grade 3/6 ejection systolic murmur, with no other audible bruits. His blood pressure in the left and right arms was 141/86 mmHg and 139/76 mmHg, respectively, and 112/75 mmHg and 125/66 mmHg in the left and right lower limbs, respectively. Chest radiography demonstrated subtle rib notching without the classical “figure 3 sign” (Panel A, red arrows). Initial transthoracic echocardiography, followed by transoesophageal echocardiography, revealed a calcified bicuspid aortic valve with fusion of the right and non-coronary cusps (Sievers classification type 1 R-N) (Panel B: right coronary cusp [blue], non-coronary cusp [red], left coronary

cusp [yellow]). The aortic valve area measured 2.3 cm². Turbulent flow was noted in the descending thoracic aorta; however, the peak gradient across this lesion was only 4 mmHg. No additional associated cardiac anomalies were identified. Further evaluation with CT aortography confirmed coarctation of the descending thoracic aorta, with the narrowest segment measuring 3.7 mm in diameter (Panel C). Distal to the coarctation, a focal outpouching of the descending aorta measuring 2.5 cm was identified, together with extensive collateral circulation involving the internal mammary, long thoracic, intercostal, spinal, vertebral, and superior epigastric arteries (Panel D). Additionally, a small berry aneurysm of the anterior communicating artery measuring 1.3 × 1.2 mm was detected on CT brain angiography. The patient subsequently underwent successful endovascular stent implantation across the coarctation segment and remains under follow-up at the cardiology clinic.

