4-Dimensional Magnetic Resonance Imaging of the Levoatriocardinal Vein

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A 9-year-old girl with a history of aortic coarctation, large ventricular septal defect (VSD), patent ductus arteriosus, and bicuspid aortic valve had previously undergone neonatal coarctation repair with ductal ligation followed by VSD closure at 4 years. Follow-up echocardiography revealed new right atrial and ventricular dilation with a prominent vein entering the left brachiocephalic vein (LBCV). Three-dimensional (3D) magnetic resonance angiography (A) and 4D flow magnetic resonance imaging (MRI) (B, Online Video 1) provide comprehensive anatomic evaluation and 3D hemodynamics with a left-to-right shunt flow pathway via a levoatriocardinal vein (LACV) draining the left atrium (LA) to the LBCV, superior vena cava (SVC), and right atrium (RA). The calculated ratio of pulmonary to systemic flow was 1.3:1. LACV is a rare, persistent venous connection between the LA and cardinal vein system (here, the LBCV) and is associated with obstructive lesions such as coarctation (1).

LPV = left pulmonary vein; LV = left ventricle; RPV = right pulmonary vein; RV = right ventricle.

REFERENCE
1. Edwards JE, DuShane JW. Thoracic venous anomalies