

An adult patient with coexistence of coarctation of aorta and patent ductus arteriosus: multimodality imaging

Aort koarktasyon ve patent duktüs arteriyosuzun birlikte bulunduğu yetişkin bir hasta: Çoklu yöntemler ile görüntüleme

A 20-year-old man was admitted to our hospital with exertional dyspnea (New York Heart Association class I- II). Past medical history was not significant. Physical examination revealed mesocardiac 2-3/6 grade continuous cardiac murmur. Electrocardiography was in normal sinus rhythm. 2D and 3D transthoracic echocardiography (TTE) demonstrated left ventricular ejection fraction of 60%, dilated left heart chambers, and mild mitral regurgitation. Suprasternal view revealed a membrane-like structure, suggesting a discrete coarctation of aorta (CoA). The systolic peak gradient across the structure was estimated at 38 mmHg. High parasternal ductal view showed a short patent ductus arteriosus (PDA) with a diameter of 5 mm and a turbulent flow in the pulmonary trunk, suggesting a patent ductus arteriosus (Fig. 1A-D, Video 1-3). All the findings were confirmed by real-time two- and three-dimensional transesophageal echocardiography (RT3D TEE) (Fig. 2 A-C, Video 4). ECG gated multislice computed tomography was performed to

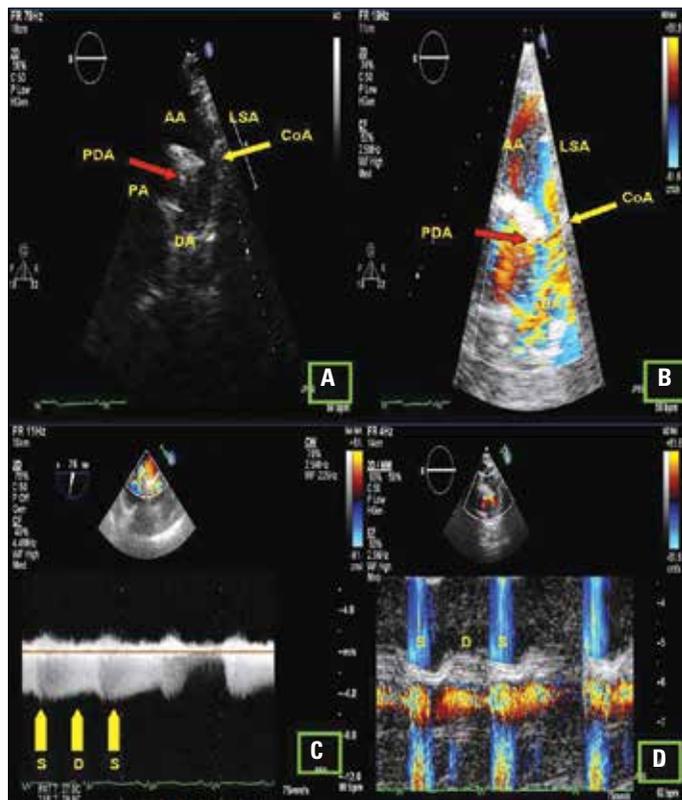


Figure 1. A) Suprasternal window of TTE showing a linear structure at the descending aorta (yellow arrow) and patent ductus arteriosus under that structure (red arrow). **B)** Suprasternal window of color Doppler TTE showing flow from descending aorta to the pulmonary artery (red arrow); **C)** Color Doppler with continuous Doppler TEE showing flow signals moving from pulmonary artery to descending aorta in systole and diastole (red arrow). **D)** Suprasternal window of color from M-mode TTE showing that the flow is between descending aorta to pulmonary artery is continuous

TTE - transthoracic echocardiography, TEE - transesophageal echocardiography

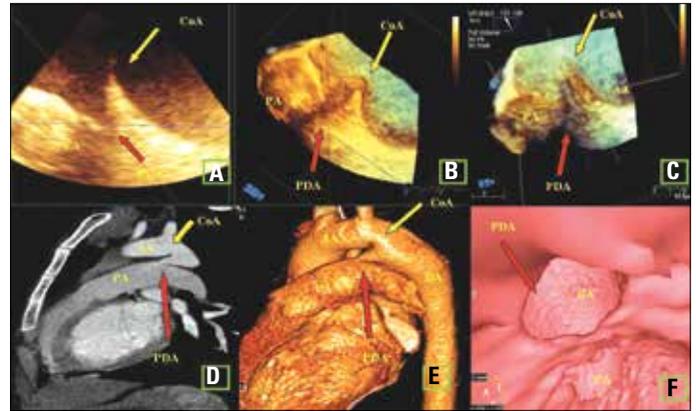


Figure 2. A) The post processing analysis of the reconstructed RT3D TEE images. The image with green axis showing a linear echo at the descending aorta (yellow arrow) and under a linear echo (red arrow) **B, C)** The post processing analysis of the reconstructed RT3D TEE images. The images showing PDA and CoA. **D)** Multiplanar reconstruction image of the left sagittal view of ECG gated multislice computed tomography revealed a PDA between the DA and the PA (red arrow) and CoA (yellow arrow) **E)** Three-dimensional volume rendering images of ECG gated multislice computed tomography from the left sagittal view revealed a PDA. **F)** Three-dimensional multislice computed tomography virtual intravascular endoscopy (VIE) image shows a PDA (view of the pulmonary artery)

AA - ascending aorta, CoA - coarctation aorta, D - diastole, DA - descending aorta, ECG - electrocardiogram, LSA - left subclavian artery, PA - pulmonary artery, PDA - patent ductus arteriosus, RT3D - real-time 3-dimensional, S - systole, TTE - transthoracic echocardiography, TEE - transesophageal echocardiography

confirm the diagnosis assess for appropriateness to percutaneous closure. Multiplanar reconstruction image of the left sagittal view of ECG gated multislice computed tomography revealed a PDA between the descending artery and the pulmonary artery and a CoA (Fig. 2 D-F). There were no additional cardiac abnormalities. The patient was scheduled to elective surgical operation. We concluded that RT3D echocardiography and multislice computed tomography assessment are very useful in the assessment of PDA and CoA.

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Video 1. Suprasternal window of TTE shows a linear structure at the descending aorta and patent ductus arteriosus under that structure

Video 2. Suprasternal window of color Doppler TTE shows flow from descending aorta to the pulmonary artery

Video 3. Color Doppler with continuous Doppler TEE shows flow signals moving from pulmonary artery to descending aorta in systole and diastole

Video 4. RT3D TEE images shows PDA and CoA

CoA - coarctation aorta, PDA - patent ductus arteriosus, RT3D - real-time 3-dimensional, TTE - transthoracic echocardiography, TEE - transesophageal echocardiography

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