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

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 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 DA and the PA (red arrow) and a 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)

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Video 1. Suprasternal window of TTE shows 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 TTE 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

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)

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