Yue Wang, MD; Yuchen Zhang, MD; Qi An, MD

0196-0644/$-see front matter

https://doi.org/10.1016/j.annemergmed.2019.03.040

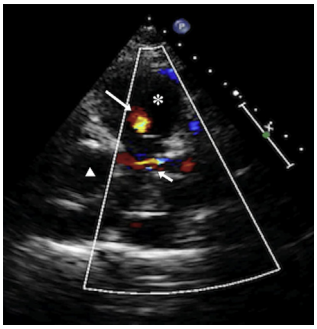

Figure 1. Transthoracic echocardiography with a parasternal pulmonary artery short-axis view showing one coronary artery (long arrow) originating from the right posterior wall of the pulmonary artery (asterisk) and retrograde flow in the coronary artery (short arrow: left coronary artery; arrowhead: aortic root).

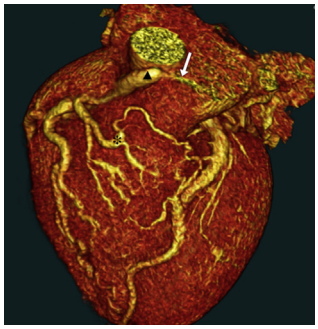

Figure 3. Three-dimensional CT angiographic reconstruction of the heart, demonstrating the anomalous origin of the right coronary artery from the main pulmonary artery (arrow), with aneurysms in its proximal part (arrowhead) and collaterals between the left and right coronary arteries (asterisk).

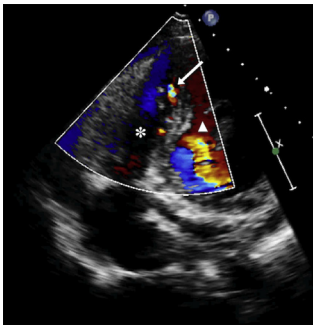

Figure 2. Color Doppler of the modified short axis in the midleft ventricular level, indicating septal coronary collaterals (arrow) (asterisk: right ventricle; arrowhead: left ventricle).

[Ann Emerg Med. 2019;74:633.]

A 30-year-old woman with no significant medical history presented to the emergency department after a sudden cardiac arrest during exercise. The initial rhythm was ventricular fibrillation, and she was resuscitated after defibrillation and compressions. Physical examination result was noteworthy for a II/III systolic murmur heard in the left sternal border. Transthoracic echocardiography (Figures 1 and 2, Videos E1 and E2 [available online at http://www.annemergmed.com]) and cardiac computed tomography (CT) angiography (Figure 3, Video E3 [available online at http://www.annemergmed.com]) were also performed.

For the diagnosis and teaching points, see page 678.
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DIAGNOSIS:

Anomalous right coronary artery from the pulmonary artery. Pulmonary artery short-axis view showed one coronary artery originating from the pulmonary artery (Figure 1), and the low-velocity diastolic flow was indicative of septal coronary collaterals (Figure 2), making an anomalous coronary artery the most likely diagnosis.[1] CT angiography (Figure 3) confirmed the origin of her right coronary artery from the main pulmonary artery, with an aneurysm in its proximal part and collaterals between the left and right coronary arteries. The patient underwent reimplantation surgery and was discharged home with medical therapy.

Anomalous right coronary artery from the pulmonary artery is a rare congenital heart disease affecting 0.002% of the population. It has not been considered to be a lethal defect in infancy or childhood, although cases of sudden death have been reported.[2] Continuous murmur, angina, dyspnea, and cyanosis are frequent presentations of anomalous right coronary artery from the pulmonary artery. Aortopulmonary window and tetralogy of Fallot are the most common associated cardiac lesions.[2,3] Visualizing the anomalous origin of the coronary artery can be challenging by transthoracic echocardiography. All cases diagnosed by transthoracic echocardiography are confirmed by angiography.[4] The most common surgical procedure is reimplantation, whereas surgical ligation of the anomalous right coronary artery is performed in a few cases.[2]

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