Anomalous origin of the right coronary artery from the pulmonary artery and simultaneous coronary-bronchial artery fistula

A 63-year-old male presented to cardiology clinic with complaints of dyspnea and chest pain during exercise since 2 months. The patient's medical history and family history were unremarkable. He was an ex-smoker and has a history of 10 pack-years of smoking. His cardiac examination was normal, except for tachycardia. His extremities were free of edema. Atrial fibrillation was detected in the patient's electrocardiogram, and laboratory results showed slightly elevated troponin level (0.91 ug/L; normal range, <0.1 ug/L). Complete blood count and other laboratory test results were within normal limits. Transthoracic echocardiogram revealed depressed left ventricular function with an estimated ejection fraction of 35%, global hypokinesia in the left ventricular walls, and mild pericardial effusion. The patient underwent coronary angiography with a preliminary diagnosis of non-ST segment elevation myocardial infarction. The left main coronary artery and its branches were found to be normal. However, the right coronary artery (RCA) ostium was unidentifiable, and there appeared to be collaterals with retrograde filling of the RCA (Fig. 1). The patient underwent coronary computed tomography angiography (CTA) for further investigation with suspicion of anomalous origin of the RCA. Coronary CTA demonstrated an anomalous RCA from the pulmonary artery (ARCAPA) (Fig. 2). Also, there were hypertrophied bronchial arteries in mediastinum, and bronchial-coronary artery fistula between the bronchial artery and the proximal part of the ARCAPA was observed (Fig. 3). With a diagnosis of simultaneous ARCAPA and coronary-bronchial artery fistulae, surgical treatment was recommended to the patient but he refused the surgery.

Both coronary-bronchial artery fistula and ARCAPA are very rare congenital anomalies. The estimated rate of ARCAPA and coronary-bronchial artery fistulae was in 0.002% and 0.18% of the population, respectively (1, 2). To the best of our knowledge, this is the first case of ARCAPA and simultaneous bronchial artery-ARCAPA fistula. Most of the cases with ARCAPA or coronary-bronchial artery fistula are asymptomatic during infancy and early childhood. Therefore, those are more frequently detected in late adolescents and young adults (1-3). These anomalies have been rarely reported in the elderly, as in our case.

Coronary CTA is currently the best method for the detection and characterization of coronary artery anomalies due to the ability to define the origin and course of the coronary arteries (4). In line with the literature, both of these two rare anomalies (ARCAPA and coronary-bronchial artery fistulae) have been clearly demonstrated with coronary CTA. In conclusion, this case highlights the imaging findings of simultaneous ARCAPA and coronary-bronchial artery fistulae that are important for guidance during surgery.

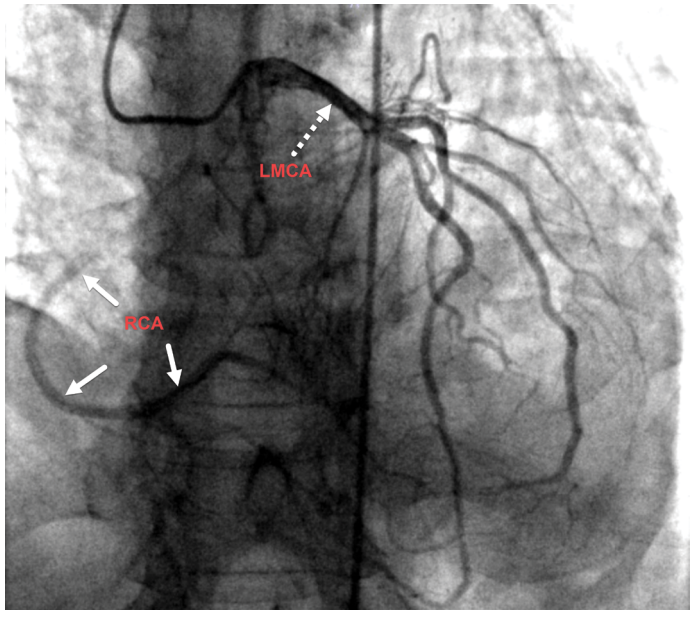

Figure 1. Coronary angiography image shows retrograde filling of the right coronary artery

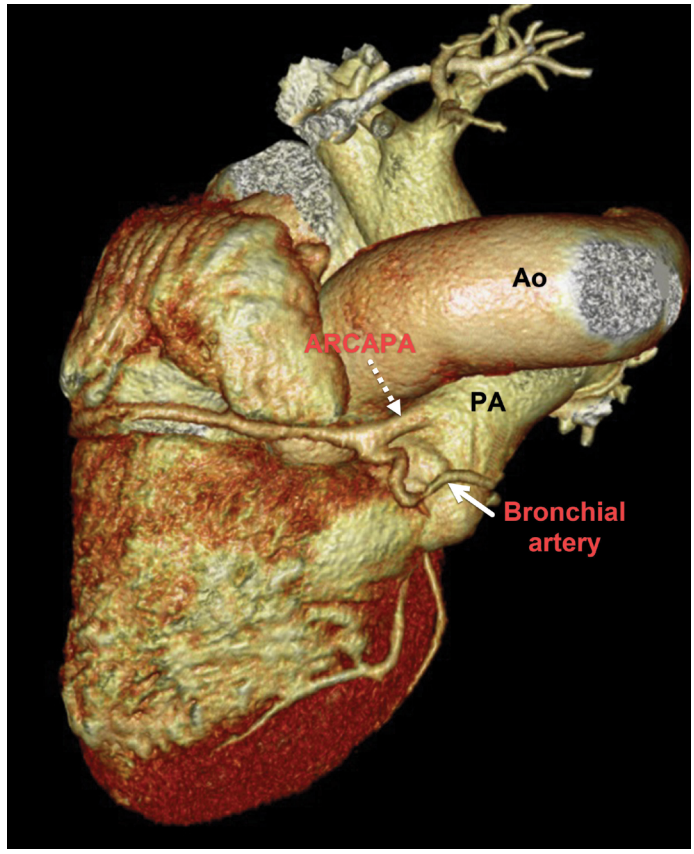

Figure 2. Coronary computed tomography angiography with volume rendering image demonstrates an anomalous right coronary artery from the pulmonary artery

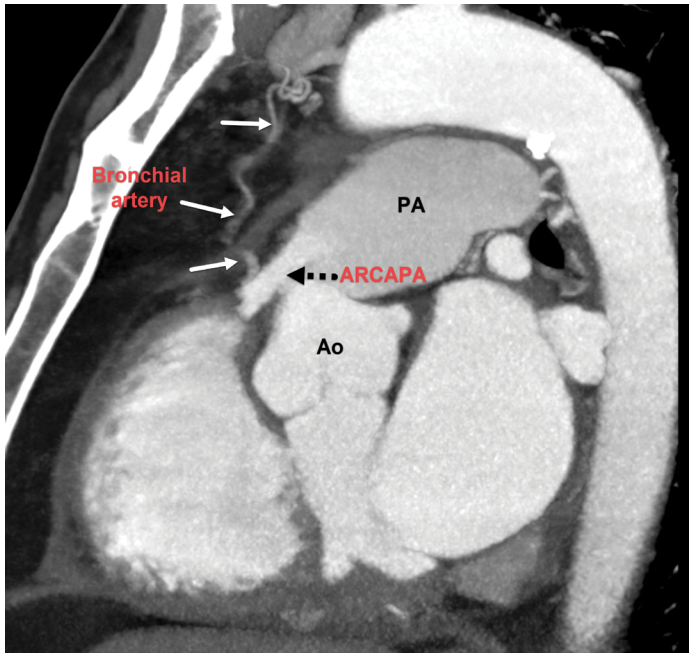

Figure 3. Coronary computed tomography angiography with a multiplanar reconstruction image shows a bronchial-coronary artery fistula between the hypertrophied bronchial artery and the proximal part of the anomalous right coronary artery from the pulmonary artery

Informed consent: Informed consent was obtained from the patient.

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DOI:10.14744/AnatolJCardiol.2019.02589

Hypertrophied crista terminalis–The great masquerader and savior

A 59-year-old female presented with complaints of dyspnea on exertion New York Heart Association Class II of 6 months duration. On evaluation, electrocardiogram revealed atrial fibrillation. Echocardiogram was done, which revealed moderate pericardial effusion and a mass in the right atrium measuring 3×1 cm (Fig. 1). Provisional diagnosis of right atrial thrombus or tumor was made in view of the clinical presentation. Computed tomography angiogram was done, which unraveled the mystery of the right atrial mass. Hypertrophied crista terminalis gave the appearance of right atrial mass on echocardiography. Also, it revealed diffuse thickening and enhancement of the entire aorta and its major branches without significant narrowing of their

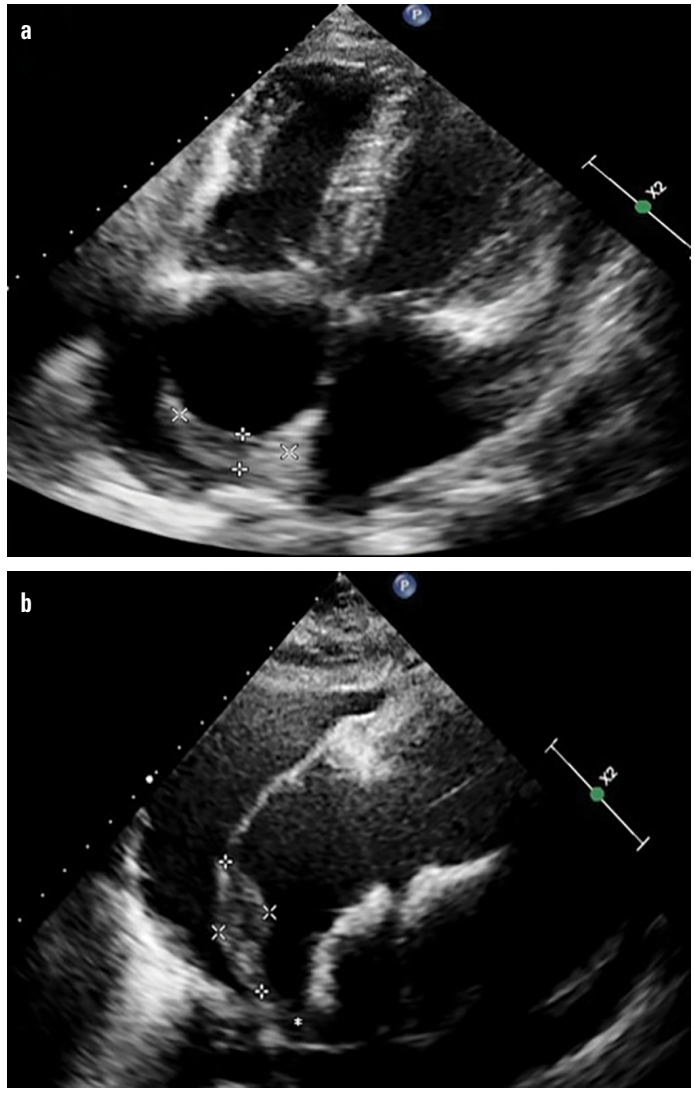

Figure 1. (a) Echocardiography in apical 4-chamber view showing right atrial mass, (b) Echocardiography in subcostal view with anterior tilt showing mass in right atrium and the superior vena cava (*)