A Rare Case of Bilateral Coronary Fistulas

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Objective

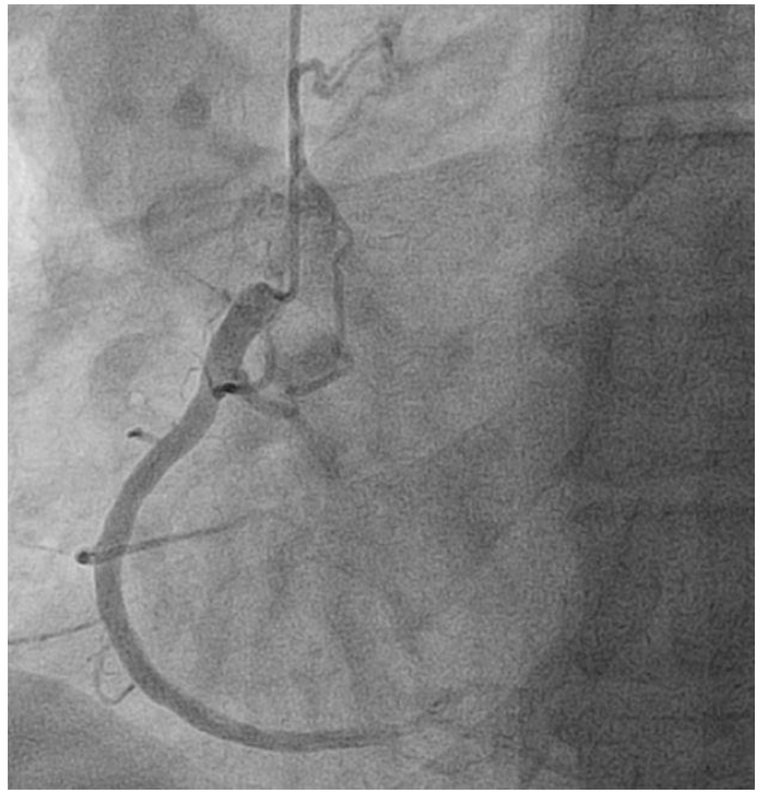
To discuss a symptomatic case of bilateral coronary fistulas arising from the left anterior descending artery (LAD) and right coronary artery (RCA) leading to the pulmonary arteries in an elderly patient.

Introduction

Coronary artery fistulas (CAF) are defined as abnormal connections between arteries and chambers of the heart or vasculature (1). Majority of the time, these fistulas are clinically silent and accidently found through angiography (6). The incidence of CAF is 0.1% among patients undergoing angiography (6). In contrast to unilateral CAF, approximately 56% of bilateral fistulas terminate in the pulmonary artery (1). Most have an abnormal embryological origin, while others can arise from infection, or iatrogenic causes (5). We present a case of bilateral CAFs to the

Case Presentation

Here we present a case of a 69-year-old man with a history of hypertension, premature ventricular contractions (PVC) and coronary artery disease (CAD), who presents to the clinic with exertional dyspnea and chest pain/ CC3 angina. On the clinic exam, a new systolic murmur was noted. EKG revealed frequent PVCs with trigeminal pattern. In 2019, Holter monitor showed high PVC burden at 28%, a PVC ablation was recommended, and the patient had declined the procedure. He was taken to Cath Lab for an elective left heart catheterization, which showed the Left anterior descending artery (LAD) giving rise to a fistula that communicates with the pulmonary artery. Additionally, showed the LAD with mild diffuse 30-35% disease in the proximal mid and distal segments. He was also found to have second coronary artery fistula arising from the proximal right coronary artery and communicating with pulmonary trunk. The right coronary artery was noted to be free of disease. A right heart cath was performed which showed step up of 6% from right ventricle to pulmonary trunk confirming the fistulous connection between coronary circulation and pulmonary trunk.



Discussion

Coronary artery fistula (CAF) is an uncommon group of anomalies that arise from an atypical connection between a coronary artery and a heart chamber or vessel. According to Liu et al, there is an Embryological theory called Hackensellners Involution Hypothesis which occurs when some of the branches of the pulmonary sinus do not involute and remain connected to the aortic sinus, resulting in the formation of a fistula (1). CAF has a prevalence rate of 0.9% in the general population. Bilateral fistulas are rare and found in 10.7-16% of all CAFs (2). Significantly rarer is involvement of both coronary arteries accounting for less than 5% There is a high prevalence of 76.8% of fistulas connecting to pulmonary arteries (2). The treatment of fistulas depends on patient presentation, size, and specific network of the fistula. Choices for treatment include medical management, observation, or surgical involvement (3). Symptomatic bilateral fistulas should undergo surgical closure (3). Our patient did not require any intervention and was clinically monitored as he was asymptomatic.

Conclusions

In contrast to unilateral CAFs, bilateral fistulas are a distinct entity that can present with acute symptoms. These fistulas can cause various cardiac symptoms such as chest pain, dyspnea or may intensify other pathology. Surgical repair is needed for management of symptomatic patients with large fistulas.

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