Breaking Boundaries: Unveiling a Cardiac Fistula from the Right Coronary Artery to the Sinus Venosus and from the Sinus Venosus to the Left Subclavian; A Singular Encounter

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Introduction

Coronary artery fistulas are rare congenital or acquired malformations in the coronary circulation, creating abnormal connections between coronary arteries and heart chambers (coronary-cameral fistulas) or systemic/pulmonary vessels (coronary arteriovenous malformations). Although often asymptomatic and discovered incidentally during coronary catheterization, they can lead to life-threatening complications such as congestive heart failure, myocardial infarction, and pulmonary hypertension.

Case presentation

A 47-year-old patient with hypertension, multiparity and previous history of a large pericardial effusion with cardiac tamponade managed with pericardiocentesis and medical management presented to the emergency department one year after her pericardiocentesis complaining of shortness of breath (SOB) and upper back pain. She was found to have elevated brain natriuretic peptide (BNP), cardiomegaly and pleural effusion. An echocardiogram revealed left ventricular ejection fraction (LVEF) of 55%, mild increasing posterior wall thickness, grade 3 diastolic dysfunction, and lipomatous atrial septal hypertrophy. She was treated for acute heart failure exacerbation with intravenous diuresis. She underwent a lexiscan stress test, which revealed a transient ischemic dilatation (TID) of 1.13 and a large area of decreased tracer uptake in the anterior wall and anterolateral wall suggestive of large area of moderate ischemia in this territory with an ejection fraction of 36% at rest. A follow up left heart catheterization with selective coronary angiogram disclosed a fistula connecting the right coronary artery (RCA) to the venous coronary sinus with the coronary sinus emptying into the right atrium. Additionally, a connection between the coronary sinus and one of the large thoracic veins (subclavian) was identified. A diagnosis of cardiac fistula followed.

Conclusion

This case report highlights accurate diagnosis of right coronary fistula, addressing, in addition to an anomalous connection of the coronary sinus to one of the large thoracic veins. Possibly explaining the state of volume overload and acute heart failure exacerbation.