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Images in Cardiology

Fountains in the heart-biventricular coronary cameral fistulae and bilateral coronary artery to pulmonary artery fistulae



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ABSTRACT

We describe about an elderly male presented to us with effort intolerance. He was diagnosed to have multiple coronary cameral fistulae and coronary pulmonary fistulae that gives an appearance of “Fountains In The Heart”. Such a combined existence of biventricular coronary cameral fistulae and bilateral coronary artery to pulmonary artery fistulae is an unforeseen entity that has never been described before in an individual.

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A 65 year old gentleman who was a reformed smoker with chronic obstructive pulmonary disease presented to us with progressive breathlessness and effort intolerance of recent onset. His pulse rate and blood pressure were 90 beats per min and 134/76 mm Hg respectively. His physical examination as well as his electrocardiogram were unremarkable. A 2D transthoracic echocardiogram showed a normal left ventricular function and trivial TR with an estimated systolic pulmonary artery pressure of 30 mm Hg. His Troponin I was

positive. Considering his poor effort tolerance and positive troponin status, he was taken up for an angiogram which revealed non obstructive, diffusely calcified coronary arteries with bilateral coronary artery to pulmonary artery fistula (Right coronary artery to pulmonary artery, Left main to pulmonary artery and Left anterior descending artery to Pulmonary artery) and biventricular coronary cameral fistulae (CCF) that included left coronary system (Left anterior descending artery to right ventricular outflow region and Left coronary

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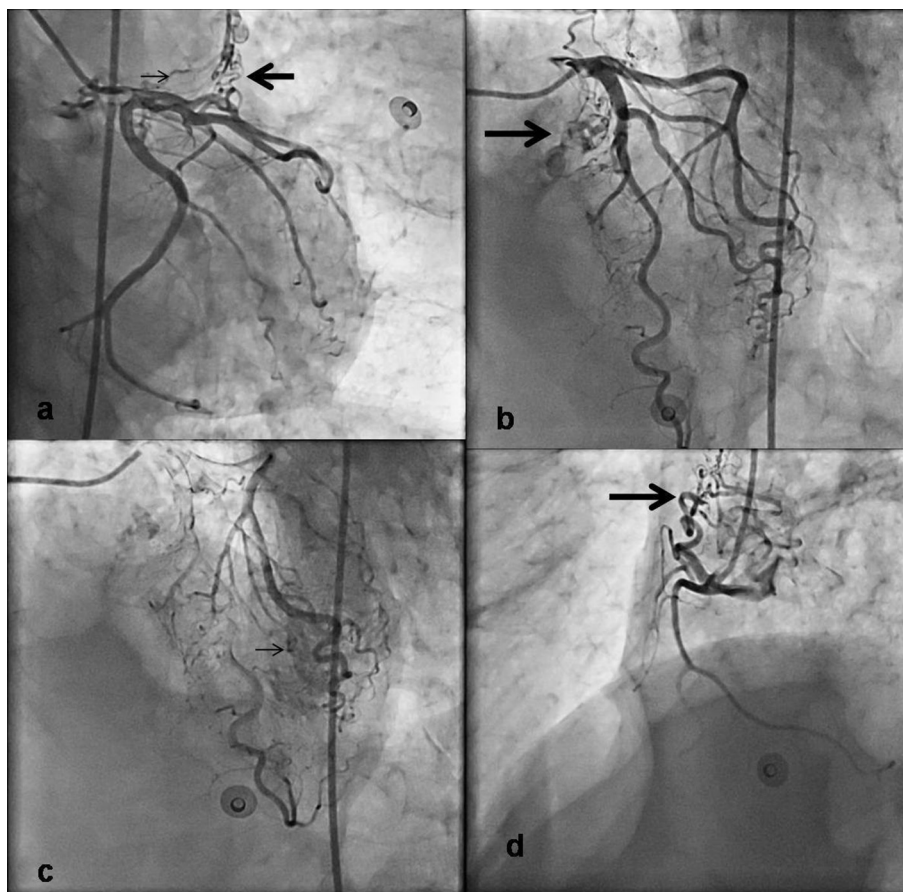


Fig. 1 – a–d. Conventional coronary angiogram. a shows left main to pulmonary artery (thin arrow) and left anterior descending artery to pulmonary artery (bold arrow). b shows left anterior descending artery to right ventricular outflow region fistula (bold arrow). c shows left coronary system to Left ventricular cavity fistulae (thin arrow). d shows a large right coronary artery to pulmonary artery fistula (bold arrow).

system to Left ventricle cavity) (micro channels filling left ventricular cavity) [Fig. 1a–d and Video 1–3]. A right heart catheterization study was also done. There was no significant step-up in the level of saturation between superior vena cava and pulmonary artery. The ratio of pulmonary blood flow and systemic blood flow (Q_p/Q_s) was 1.4. Hence no intervention was done and he was advised for medical follow up. A contrast enhanced computerized tomography (CECT) chest was done which also revealed the same findings (Fig. 2a–d). Such a combination of biventricular coronary cameral fistulae and bilateral coronary artery to pulmonary artery fistulae is an unforeseen entity that has not been described before.

Supplementary data related to this article can be found online at <http://dx.doi.org/10.1016/j.ihj.2014.11.002>.

Coronary artery fistula is an anomalous communication between a coronary artery and chamber of the heart or any division of the systemic or pulmonary circulation.¹ Hence they can be classified into two types based on the site of their drainage, coronary cameral fistula and coronary artery to venous fistula. Coronary artery fistulae (CAF) are rare coronary anomalies. The estimated incidence of coronary

artery fistula is about 0.002% in the general population while the same is higher in patients who undergo coronary angiogram which is between 0.05% and 0.25%.² While most of them are congenital in nature, some of them are acquired. Acquired CAF are described after angioplasty, surgery, right ventricular biopsy, permanent pacemaker implantation and trauma.³ The association of such acquired collaterals with severe obstructive coronary artery disease have been described. We presumed that COPD may be cause of such coronary arteries fistulae in our patient. It was postulated that these collaterals have lost their way and terminated into cardiac chambers or they were pre-existing arterio-venous communication that have been recruited now.³ Right ventricle (41%) is the most common site of drainage followed by right atrium (26%) and pulmonary artery (17%). Only 5% of CAF are bilateral in nature. Coronary artery fistulae draining into pulmonary arteries are usually bilateral in nature. Though occurrence of biventricular coronary cameral fistula and bilateral coronary artery to pulmonary artery fistulae have been described individually, the combination of the same has not been described in a same patient in literature before.

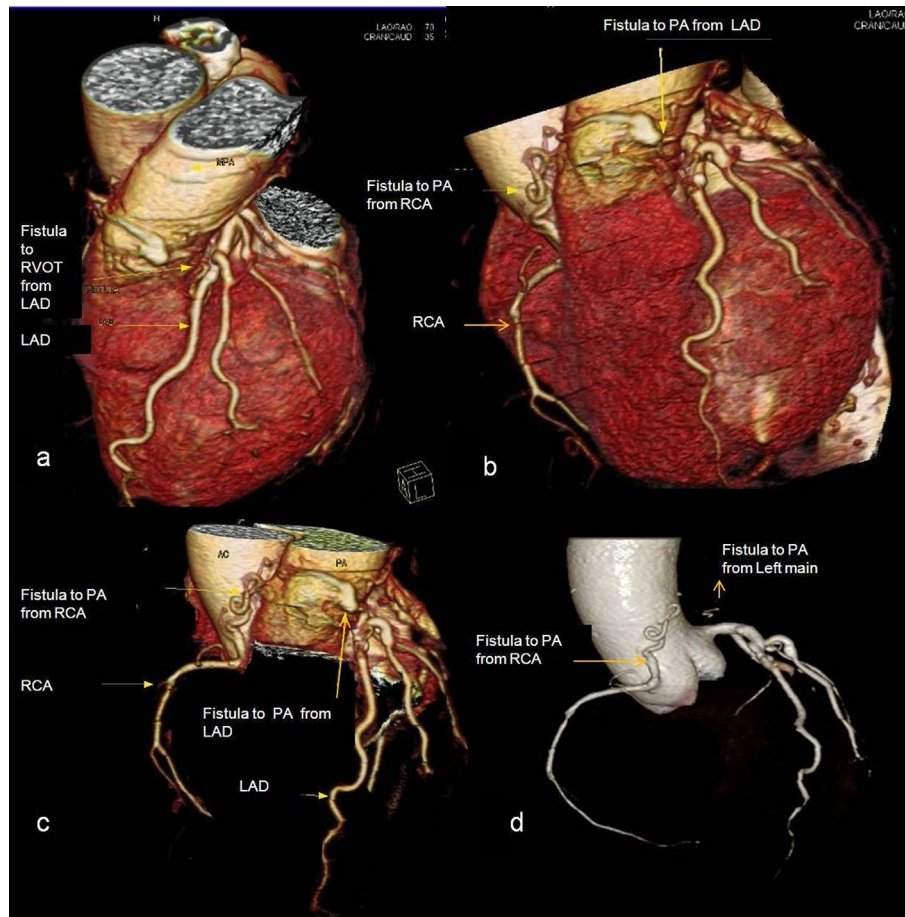


Fig. 2 – a–d: 3D Reconstructed images computerized topography coronary angiogram. **a** Shows fistula from left anterior descending artery (LAD) draining into right ventricular outflow tract (RVOT). **b** and **c** Shows fistulae to pulmonary artery (PA) draining into right coronary artery (RCA) and left anterior descending artery (LAD). **d** shows fistula from left main coronary artery draining into pulmonary artery (PA).

Conflicts of interest

All authors have none to declare.

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