An unusual image of Vieussens' arterial ring communicating with the pulmonary artery

Vieussens' arterial ring (VAR) is a collateral pathway between the conus branches of the right and left coronary arteries that was first described by French anatomist Raymond de Vieussens. VAR's are observed in 48% of the population; however, pathologic VAR is very rare.

A 58 year-old male patient with a history of smoking and positive family history was admitted to our clinic complaining of chest pain. Because of the positive exercise stress test, coronary angiography was performed. His coronary angiography revealed noncritical lesions, but visualized VAR between left anterior descending artery (LAD) (Fig. 1-4) and right coronary artery (RCA) with pulmonary artery fistula (CAF) (Video 1-6). We considered that these collaterals may trigger angina and medical therapy was rearranged. During a follow-up period of 6 months with medical therapy, there was no cardiac event or angina.

VAR may provide an important collateral blood flow in cases of proximal LAD, or less commonly, RCA stenosis. VAR will become dilated when there is proximal LAD occlusion, or less frequently, RCA occlusion. Pathological conditions (aneurysm, rupture) involving the ring are extremely infrequent and there are few cases about these complications. The ring may also communicate with the pulmonary trunk. CAF are abnormal connections between coronary arteries, great vessels, or cardiac chambers which incidence is nearly 0.87%. Many studies have investigated CAFs and their possible origins; however, reports of VAR with CAF are very rare. Therefore, our case is important to demonstrate the possible interaction between VAR and CAF. We need further studies to treatment for uncomplicated VAR.

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Video 1. Left anterior descending coronary artery and pulmonary artery fistula in left anterior oblique cranial view
Video 2. Left anterior descending coronary artery and pulmonary artery fistula demonstrated in right anterior oblique cranial view

Figure 2. Right coronary angiography demonstrated the dilated conus branch with pulmonary artery fistula (arrow)

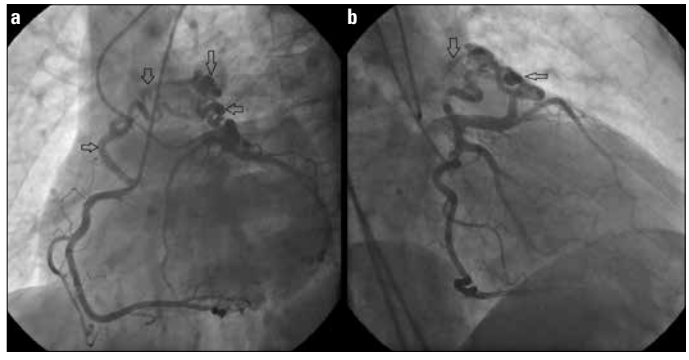

Figure 3. a, b. Vieussens arterial ring, pulmonary artery fistula, and aneurysm of ring (arrows)

Figure 1. a-c. Left coronary angiography demonstrated an anomalous coronary fistula from the proximal left anterior descending coronary artery to the pulmonary artery (arrows) in different views

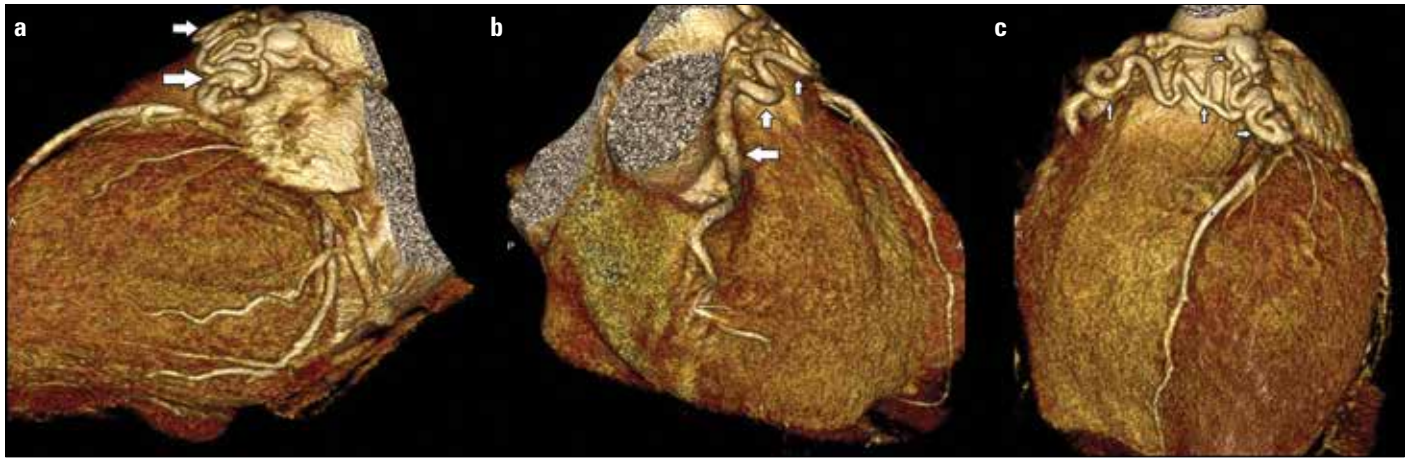

Figure 4. a-c. Three-dimensional reconstruction of computed tomography coronary angiography. The right conal branch and the proximal left anterior descending coronary artery formed Vieussens' arterial ring (arrow) with aneurysmal dilatation

Video 3. Left anterior descending coronary artery and pulmonary artery fistula with aneurysm in right anterior oblique caudal view
Video 4. Right coronary artery and the conal branch of the right coronary artery in left anterior oblique view
Video 5. "Vieussens Arterial Ring," pulmonary artery fistula, and aneurysm of ring in left anterior oblique view
Video 6. "Vieussens Arterial Ring" in right anterior oblique view

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