

Transthoracic echocardiographic detection of a coronary artery-pulmonary artery fistula

Transtorasik ekokardiyografi ile saptanan bir koroner arter-pulmoner arter fistülü

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Fistulas are the most common anomaly of the coronary arteries. A 48-year-old woman presented with typical chest pain. She had no cardiovascular risk factors and no ischemic signs. Transthoracic echocardiography revealed a diastolic turbulence at the distal part of the pulmonary artery and an aberrant vascular structure on parasternal short-axis views. Coronary angiography showed a fistula from the the left anterior descending artery to the pulmonary artery, associated with an aneurysmal sac 16 mm in diameter, before reaching the pulmonary artery. The patient refused surgical treatment.

Key words: Chest pain/etiology; coronary aneurysm/radiography; coronary angiography; coronary vessel anomalies/diagnosis; echocardiography, Doppler; fistula/diagnosis; pulmonary artery/ultrasonography; vascular fistula/complications/radiography.

Fistulas are the most common anomaly of the coronary arteries.^[1] It is known as an abnormal connection of a coronary artery with a great vessel or vascular tissue.^[1,2] Fifty percent of the patients are asymptomatic, the rest suffer from congestive heart disease, myocardial ischemia, infective endocarditis, arrhythmia, sudden death, or rupture of the aneurysmal fistula.^[3] Most of the fistulas are small and they are incidentally diagnosed by coronary angiography.^[2-4]

We aimed to report a rare giant aneurysmal fistulation that was diagnosed by transthoracic echocardiography (TTE) without the use of transesophageal echocardiography (TEE).

CASE REPORT

A 48-year-old woman was admitted to our cardiology department for typical chest pain of a two-year

Koroner arterlerin en sık anomalisi fistüllerdir. Herhangi bir kardiyovasküler risk faktörü ve iskemi bulgusu olmaksızın göğüs ağrısı ile başvuran 48 yaşında kadın hastada, ekokardiyografide parasternal kısa eksen de pulmoner arter distalinde diyastolik türbülans gözlemlendi. Aynı pencerede aberran vasküler yapı görüntülenmesi üzerine uygulanan koroner anjiyografide, sol ön inen arter ile pulmoner arter arasında fistül görüldü. Fistülde, pulmoner artere ulaşmadan önce 16 mm çapında anevrizmal kese dikkat çekmekteydi. Hasta önerilen ameliyatı kabul etmedi.

Anahtar sözcükler: Göğüs ağrısı/etyoloji; koroner anevrizma/radyografi; koroner anjiyografi; koroner damar anomalisi/ tanı; ekokardiyografi, Doppler; fistül/tanı; pulmoner arter/ultrasonografi; vasküler fistül/radyografi.

history, which increased in severity in the past two months. She had no history of hypertension, diabetes mellitus, dyslipidemia, or smoking. The systolic and diastolic blood pressures were 120 mmHg and 80 mmHg, respectively. The heart rate was 78 beats per minute. Cardiac auscultation revealed a splitting of S1. A left parasternal diastolic murmur was noted. Blood glucose, cholesterol levels, and electrolytes were in normal ranges. Electrocardiography showed a negative T wave in the precordial leads. Transthoracic echocardiography (TTE) revealed a diastolic turbulent flow at the distal part of the pulmonary artery (PA) (Fig. 1a) and an aberrant vascular structure between the left anterior descending artery (LAD) and PA (Fig. 1b) on parasternal short-axis views. During the exercise stress test, no signs of ischemia were noted. Coronary angiography was performed, whereby a fistula was detected between the LAD and

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the PA (Fig. 2). The proximal part of the LAD was moderately ectatic measuring 12 mm in diameter. After the ectatic area, the diameter was 6 mm. The fistula was detected at the junction of the normal segment and the ectatic area. The aberrant vascular structure showed fistulization into the PA with an aneurysmal sac 16 mm in diameter before reaching the PA. A muscle bridge was observed after the ectatic segment, causing an obstruction of 60%. Thallium scintigraphy did not show any ischemic signs. An operation was recommended to the patient, but she refused.

DISCUSSION

A coronary artery fistula is a rare and often congenital phenomenon.^[5] Its frequency of detection is 0.1-0.2% on normal angiography.^[4,6] Half of the fistu-

las originate from the right coronary artery and the rest are from the LAD and the circumflex artery. The drainage of the fistula in adults is usually to PA.^[2,4,7]

Coronary angiography is the gold standard for the diagnosis of coronary artery fistulas. Transesophageal echocardiography may also be helpful for the diagnosis.^[8] If the coronary artery is dilated, it can be visualized by TTE.^[9] As seen in our patient, TTE showed a diastolic turbulence caused by the fistula in the PA. The appearance of a diastolic turbulence may help distinguish a fistula from the right ventricle ejection.^[8] The acoustic window may not be capable of showing the fistula in adults. In our case, parasternal short-axis views enabled to visualize the fistula without the help of TEE.

The coexistence of a coronary artery aneurysm with a coronary artery fistula is very rare.^[10] It is commonly associated with myocardial ischemia, whose pathophysiology is usually a coronary stealing phenomenon or compression.^[11] An aneurysm that caused a myocardial infarction was reported in the literature.^[12] The risk for myocardial infarction is much more higher in giant aneurysms exceeding 5 mm in diameter.^[13] Surprisingly enough, no ischemic signs were present in our patient despite the presence of a giant aneurysm measuring 16 mm, drainage to the PA, and a muscular bridge.

Rupture of an aneurysm is common and may result in mortality. Secondary signs of compression and embolization may be seen. Operation is neces-

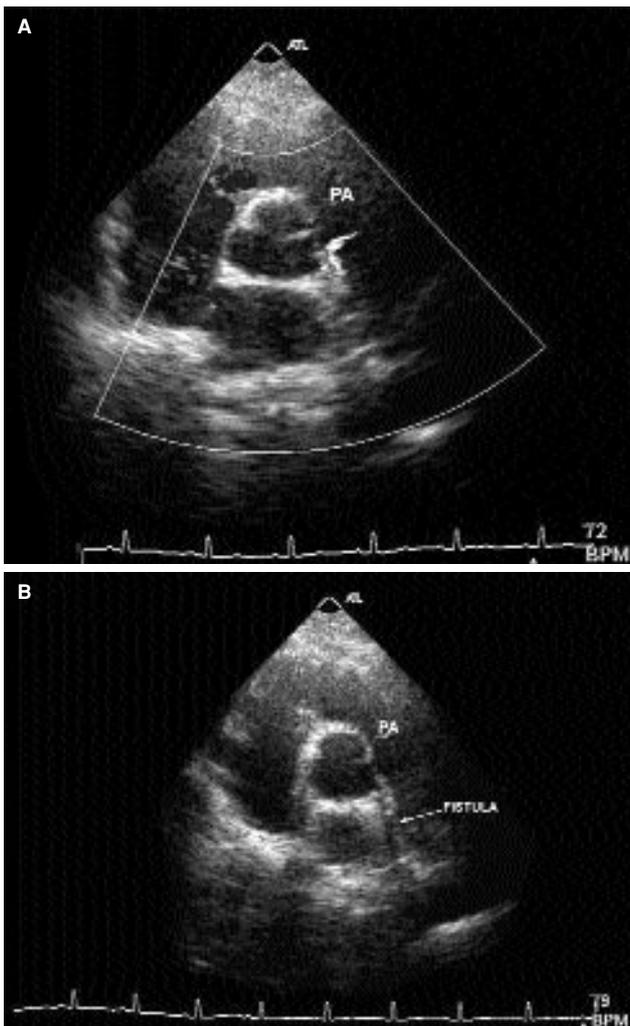


Fig. 1. Parasternal short-axis images. Transthoracic echocardiography showing (A) turbulence and (B) coronary artery-pulmonary artery fistula. PA: Pulmonary artery.

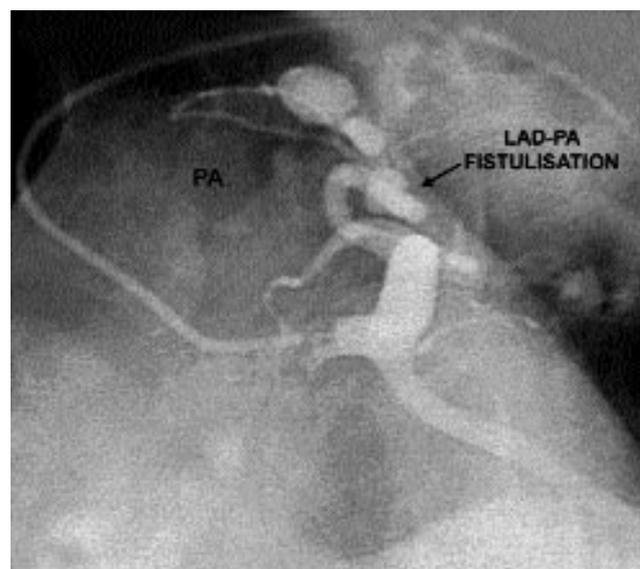


Fig. 2. Digital subtraction angiography of the left coronary artery demonstrating a fistula that involved the left anterior descending coronary artery with drainage into the main pulmonary artery.

sary to avoid these complications.^[12] Sometimes small fistulas may resolve spontaneously.^[14] Some authors believe that all patients with fistulas should be treated by fistula embolization or surgery because of potential fatal complications even though they cause no symptoms.^[15]

In conclusion, giant fistulas that drain to the PA can be visualised by TTE without the use of TEE. Detection of a diastolic turbulence in the PA can be a diagnostic sign. Such patients should undergo coronary angiography.

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