ANOMALOUS ORIGIN OF LEFT CORONARY ARTERY FROM PULMONARY ARTERY IN A 54-YEAR-OLD WOMAN PRESENTING VENTRICULAR TACHYCARDIA FROM ANTEROSEPTAL SCAR

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We report a 54-year-old female with anomalous origin of the left coronary artery from the pulmonary artery who came to our hospital complaining of dizziness presumably due to ventricular tachycardia. Electrocardiography, echocardiography and myocardial scintigraphy were indistinguishable from anteroseptal myocardial infarction. Only coronary angiography enabled us to differentiate between atherosclerotic ischemic heart disease and anomalous origin of left coronary artery from the pulmonary artery.

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PATIENTS with anomalous origin of the left coronary artery from pulmonary artery (ALCAPA) rarely survive to adulthood. Severe myocardial infarction and death in infancy is common! There are a few reports of patients with ALCAPA living for more than 50 years, with the oldest known survivor being a 61-year-old woman? We present a 54-year-old female ALCAPA patient and emphasize the difficulty in differentiating ALCAPA from atherosclerotic ischemic heart disease unless coronary angiography is used in the diagnostic process.

CASE REPORT

A 54-year-old female was admitted to our hospital in 1991 because of a 7-year history of mild dizziness associated with electrocardiographic (ECG) abnormalities. She had no history of chest pain. On examination, the pulse rate was 70 beats/min, and blood pressure was 140/70 mmHg. A grade 1/6

mid-systolic murmur was heard at the third intercostal space without extracardiac sounds or diastolic murmur. ECG revealed normal sinus rhythm with abnormal Q waves in leads aVL and V₃, small R waves in V₁ through V₂, and left ventricular hypertrophy (Fig. 1). A maximum of 19 runs of ventricular tachycardia was seen on 24 h ECG monitoring. Two-dimensional echocardiography revealed large anteroseptal akinesia associated with aneurysm. Exercise thallium²⁰¹ myocardial scintigram showed a fixed defect located in the anteroseptal and apical portions. Left ventriculography disclosed akinesia of the anteroseptal and apical regions with an ejection fraction of 37% and faint opacification of an enlarged right coronary artery (RCA)(Fig. 2). Pulmonary artery (PA) pressure was 16/7 mmHg. Selective coronary angiography with power injection into the RCA revealed that the markedly enlarged dominant RCA, which also supplied the circumflex artery area, drained into the main PA through the left anterior descending artery (LAD) via rich capillary collateral circulation. However, blood gas analysis during cardiac catheterization revealed

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Fig.1. An electrocardiogram on admission revealed slight prolongation of QRS interval, notching of QRS shape and QS pattern in leads V₁ through V₃.

no significant increase in oxygen in the right atrium, right ventricle or PA. Surgery included aorto-coronary bypass to the LAD, closure of the origin of the left coronary artery in the PA, and left ventricular aneurysmectomy.

Two months postoperatively, anteroseptal akinesia remained unchanged on left ventriculography and the LAD bypass was patent. However, neither ventricular tachycardia on 24 h ECG monitoring nor dizziness were observed.

DISCUSSION

This patient was referred to our hospital because of ECG abnormalities associated with dizziness. Since ventricular tachycardia with a maximum of 19 runs was seen on 24 h ECG monitoring, this mild dizziness was presumably due to the ventricular tachycardia resulting from the left ventricular aneurysm. ECG, echocardiography and myocardial scintigraphy findings were consistent with, and indistinguishable from, silent old anteroseptal myocardial infarction. In addition, the continuous murmur which has been observed in other reported cases of ALCAPA was absent. Therefore, we performed cardiac catheterization under the diagnosis of ischemic heart disease. However, left ventriculography showed opacification

of an enlarged RCA and provided the first indication of ALCAPA.

Left ventricular aneurysms can induce ventricular tachycardia in patients with ischemic heart disease. Aneurysmectomy and/or ablation of the abnormal reentrant circuit is indicated for refractory ventricular tachycardia. Similarly, aneurysmectomy in this case, although the cause was not ischemic, suppressed the ventricular tachycardia associated with the disappearance of dizziness. The bypass graft to the LAD was patent, but a 2-month follow-up period might not be sufficient for this abnormal left ventricular (LV) motion to improve.

Routine echocardiography is sometimes useful in detecting enlarged and/or aneurysmal proximal coronary arteries in patients with Kawasaki's disease or coronary fistula. However, in this case, the enlarged proximal RCA could not be detected because this patient was a poor subject for echocardiography.

Power injection into the RCA provided excellent visualization of the LAD through the rich network of capillary collaterals and its drainage into the PA. However, no significant left-to-right shunt was observed. Coronary angiography using the power injection method does not reflect the physiological coronary blood flow of the LAD. Considering that LV motion is not disturbed

Fig. 2. Left ventriculogram showed akinesia in segments 2, 3 and 4 (thick arrows), and an enlarged right coronary artery (thin arrows) was demonstrated (upper left=end diastolic; upper right=end systolic). Selective right coronary angiography with power injection revealed (lower left) that the left coronary artery (lower right), seen through the capillary collateral circulation, drained into the pulmonary artery (anterior and posterior view).

in patients with complete obstruction of the left main trunk who have excellent collaterals from the RCA, the flow in the proximal portion of the LAD in this patient might represent competition between the rich capillary collateral circulation from the RCA and the deoxygenated pulmonary flow. This would explain the development of a silent anteroseptal scar.

ALCAPA can cause myocardial infarction in adults, and in some cases only coronary angiography can differentiate between atherosclerotic ischemic heart disease and ALCAPA, especially when the patient is a poor

subject for echocardiography?

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