A CASE OF MULTIPLE CORONARY ARTERY-LEFT VENTRICULAR MICRO-FISTULAS INCIDENTALLY FOUND BY PAROXYSMAL ATRIAL FIBRILLATION ATTACK

YUSUKE YAMABA, MD, SHIGENORI ITO, MD, KOTARO MORIMOTO, MD, MASAHIKO INOMATA, MD, TAKAYUKI YOSHIDA, MD, NOZOMU TAMAI, MD, SHIN SUZUKI, MD, KOICHI SATO, MD

Division of Cardiology, East Medical Center Higashi Municipal Hospital City of Nagoya

(Accepted for publication October 10, 2008)

ABSTRACT

The patient is a 75-year-old woman who underwent coronary angiography for the evaluation of sinus arrest found after treatment of paroxysmal atrial fibrillation. After contrast injection the left ventricle was seen to fill faintly with contrast from a diffuse plexus of fine vessels arising from the diagonal branch and posterodescending branch of right coronary artery. The feeding arteries were very fine and not dilated or tortuous. In subsequent treadmill test, negative T waves in leads V1-5 changed to positive, which suggested possible left ventricular myocardial ischemia.

Key words: coronary fistulae, coronary anomaly, angina pectoris, left ventricle

CASE REPORT

A 75-year-old woman consulted a family doctor because of palpitations in October, 2007. An electrocardiogram showed paroxysmal atrial fibrillation with tachycardia. She was transferred to our division for treatment. We administered verapamil (5 mg), disopyramide (50 mg), and digoxin (0.25 mg) intravenously. However, the drugs were not effective and she was admitted to our hospital for observation. Although her cardiac rhythm returned to normal sinus rhythm spontaneously 4 hours after admission, we detected a sinus pause of 10 seconds. She underwent cardiac catheterization tests
including an overdrive suppression test and coronary angiography to evaluate the sinus pause. The result of the overdrive suppression test was normal. Thus, we concluded the sinus pause was drug-induced. Coronary angiography revealed shortly after contrast injection that the left ventricle was slightly filled with contrast from a diffuse plexus of fine vessels arising from the diagonal branch (Figs. 1a and 1b) and postero-descending branch of the right coronary artery (Fig. 2). The feeding arteries were very fine and not dilated or tortuous. In a subsequent treadmill test, she excised to 4.6 METs and the test was stopped at the end of stage 1 (three minutes) in the Bruce protocol because of leg fatigue. The negative T wave at rest was changed to a positive T wave, the height of which was 1.5 mm, at the end of the excise(1) (Fig. 3). Thus, we judged the test to be positive. The patient did not experience any chest symptom during excise. Echocardiography showed no abnormalities or shunt flow through the left ventricle. The diameters of the left ventricle and left atrium were within normal limits (43 mm and 35 mm, respectively). She had not experienced effort angina previously and she declined a myocardial scintigram.

DISCUSSION

We reported a rare case of multiple coronary artery-left ventricular micro-fistulae with positive treadmill test. This congenital coronary artery anomaly should always be remembered as a rare cause of angina pectoris.

Coronary artery fistulae are found during cardiac catheterization in 0.08-0.2% of cases and

![Figs. 1a and 1b.](image)

Selective coronary angiography (right anterior oblique view view (a) and anteroposterior cranial view (b)) showing the left descending and circumflex arteries. Multiple fine fistulae arising from the first diagonal branch communicate with the left ventricular cavity.
Selective coronary angiography (right anterior oblique) showing the right coronary artery. A maze of fine vessels arise from the posterior descending artery (PDA) and communicate with the left ventricular cavity.

The negative T waves in precordial leads turned to be positive ones after excise of 4.6 Mets.
those connected to the left ventricular cavity have been reported to represent 3%\textsuperscript{5,6} of all coronary arterial fistulae. In patients with this anomaly, the steal phenomenon\textsuperscript{5} sometimes occurs with aging and can become the cause of effort angina. As another consequence of these shunts, left ventricular diastolic volume overload\textsuperscript{7,8} and hypertrophy also occasionally occur, which may increase the possibility of congestive heart failure and myocardial ischemia. Both beta-blockers and calcium channel-blockers are reported to be effective for angina\textsuperscript{9}, most likely due to an improvement of myocardial oxygen supply-demand mismatch. Exercise tolerance and \textsuperscript{201}thallium stress scintigraphy were reported to be positive for myocardial ischemia in 29% and 50%, respectively, of the tested patients with this anomaly.\textsuperscript{9} The present case exhibited possible ischemic changes on treadmill testing, but not left ventricular dilatation. The patient declined to undergo a scintigram because she had no symptoms. We will continue to closely follow this patient.

REFERENCES