

Slow flow in ectatic dilated coronary arteries as the cause of sudden cardiac arrest during diagnostic coronary angiography

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Coronary artery ectasia (CAE) is the widening of a coronary artery segment by at least 1.5 times compared to the adjacent segment. CAE is often accompanied by slow vascular flow while CAE with coexisting atherosclerosis is associated with adverse cardiovascular events [1].

A 75-year-old female patient with a history of hypertension and hyperlipidemia, atypical angina pain for about a year, and a clinically and electrocardiographically positive stress test was admitted to the Department for coronary angiography. On admission, the patient remained stable, her blood pressure was 138/82 mm Hg, and ECG showed a sinus rhythm of 63 beats per minute, intermediate axis. The patient underwent echocardiography, which showed normal valve function, mildly impaired diastolic function, and normal left ventricular systolic function with ejection fraction of 60%. The patient underwent coronary angiography (Figure 1A–C), which showed a dilated left main coronary artery, left anterior descending artery, and circumflex artery with adjacent atherosclerotic lesions, slowed flow, and contrast backlog (Figure 1A, B). During the left coronary artery catheterization, the patient developed sudden cardiac arrest in ventricular fibrillation, which was successfully defibrillated. The patient was qualified for further conservative treatment of coronary artery disease. Twenty-four-hour Holter ECG monitoring was performed, in which no complex forms of arrhythmia were observed. Trimetazidine was added to the existing pharmacological treatment of coronary artery disease (acetylsalicylic acid, cilazapril, amlodipine, bisoprolol, and rosuvastatin). The patient was discharged.

Coronary artery ectasias are vascular anomalies involving segmental vasodilatation with impaired coronary flow. The flow may be slowed and turbulent, which promotes thrombus formation and coronary artery spasm.

Slowed coronary flow in dilated vessels contributes to clinical symptoms, mainly exercise and resting angina pain. In addition, life-threatening arrhythmias and sudden cardiac arrest can occur in patients with slow flow [1, 2]. Coronary ectasia is found in 0.3%–4.9% of coronary angiography studies, and most cases are detected incidentally [3].

Coronary angiography is the main test used to diagnose ectasia. However, delayed contrast filling, segmental retrograde flow, and contrast stasis in dilated vessel segments make the study difficult to perform. A strong and prolonged injection of contrast is often necessary, increasing the risk of complications during the study. Our patient had coronary artery ectasias and slowed coronary flow during coronary angiography. In addition, the administration of contrast induced sudden cardiac arrest through ventricular fibrillation. Malignant ventricular arrhythmias are very rare during diagnostic coronary angiography (<0.5%), and contrast agent is considered to be their most common cause.

The presented patient was treated with an antianginal drug, trimetazidine, due to the reported retrosternal pain. In CAE, nitrates are contraindicated because they may exacerbate clinical symptoms. However, trimetazidine, which increases exercise tolerance in these patients, is recommended and safe [4].

In previous studies, the prognosis of CAE patients varies, but the accompanying

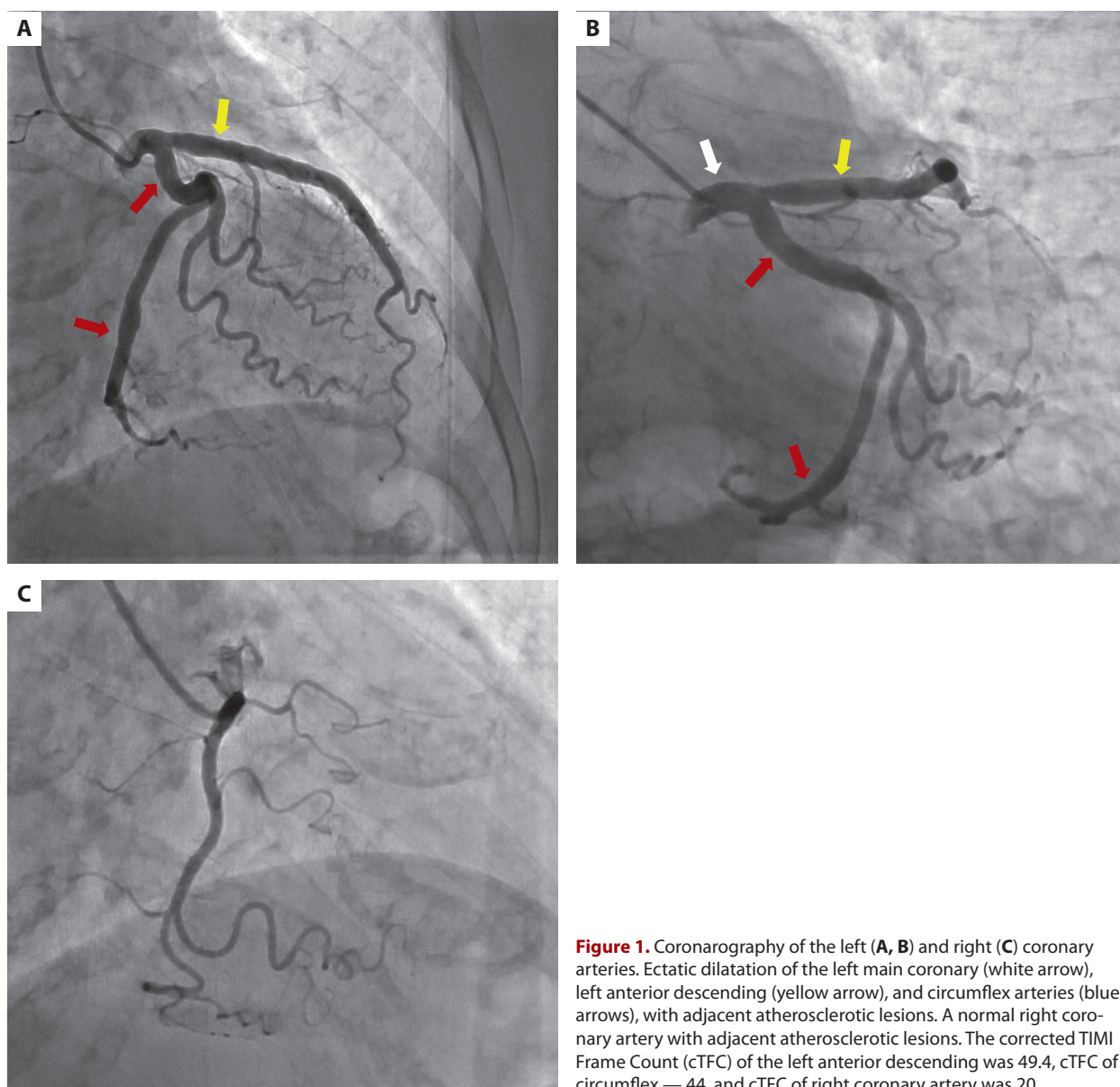


Figure 1. Coronarography of the left (A, B) and right (C) coronary arteries. Ectatic dilatation of the left main coronary (white arrow), left anterior descending (yellow arrow), and circumflex arteries (blue arrows), with adjacent atherosclerotic lesions. A normal right coronary artery with adjacent atherosclerotic lesions. The corrected TIMI Frame Count (cTFC) of the left anterior descending was 49.4, cTFC of circumflex — 44, and cTFC of right coronary artery was 20

slowed coronary flow causes angina complaints, which accounts for more frequent hospital admissions of patients and increases mortality in follow-up over several years [2]. The diagnosis and prognosis of these patients are further worsened by the coexistence of coronary atherosclerosis, so patients with coronary ectasias require special long-term follow-up [2, 5].

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