

Left Ventricular Free Wall Rupture Immediately following Successful Coronary Reperfusion Complicating ST Elevation Myocardial Infarction

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A 70-year-old man complaining of several hours of aggravated chest pain was referred to our emergency department. An initial 12-lead electrocardiography revealed a Q wave and ST elevation in leads V1 to V4 (Fig. 1). Cardiac enzymes (CK-MB 215.6 ng/mL [0-6.22], Troponin I 44.4 ng/mL [0.000-0.016]) were elevated. An emergent coronary angiogram revealed total occlusion of the proximal left anterior descending (LAD) coronary artery (Fig. 2A), normal right coronary artery (Fig. 2B) and percutaneous coronary intervention (PCI) with drug-eluting stent implantation in the proximal LAD (Fig. 2C). Several minutes later, the patient suddenly collapsed and experienced pulseless electrical activity, complaining of chest pain and diaphoresis. Extracorporeal cardiopulmonary resuscitation was applied, and portable echocardiography revealed a large pericardial effusion (Fig. 2D). Emergent pericardiocentesis was performed and the bloody pericardial effusion was aspirated. Left ventriculogram revealed myocardial rupture in the anterior myocardium (Fig. 2E). The patient was immediately diagnosed with left ventricular (LV) free wall rupture, and the cardiothoracic surgical team was urgently alerted to perform external patching of the cardiac rupture. Unfortunately, while awaiting surgery, the patient's condition deteriorated and he died of multiorgan failure.

LV free wall rupture is an extremely rare complication of acute myocardial infarction in the primary PCI era¹ with a frequency of approximately 1 in 13,000 patients (0.007%). This complication frequently results in death, with an in-hospital mortality rate of 80% in large studies.² It is more common in the anterior and lateral walls and is associated with old age, lack of collateral circulation, ischemic preconditioning, and presentation with first myocardial infarction, as in our patient. Our case is of interest because the etiology of the rupture occurred several minutes after successful revascularization. The mechanism of rupture in this patient was not clear. However, subacute myocardial infarction was suspected because of the Q wave in the elec-

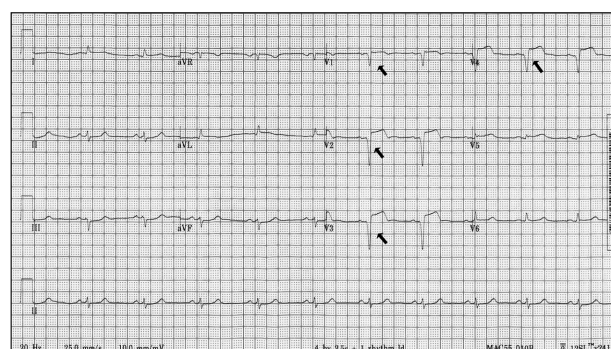


FIG. 1. Initial 12-lead electrocardiography showing ST elevation and a Q wave in leads V1-V4 (arrow).

trocardiography and elevated troponin levels. Intramyocardial damage following reperfusion injury could lead to myocardial tears on a thinned myocardial wall.³ Prompt recognition of this complication in a cardiac catheterization laboratory using ventriculography is necessary to allow immediate surgical alerting and operation.⁴ Even with an early diagnosis, mortality remains extremely high.

Written informed consent was obtained from the patient for publication of this case report, which was approved by the Institutional Review Board of the Chosun University Hospital (CHOSUN 2021-07-004).

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CONFLICT OF INTEREST STATEMENT

None declared.

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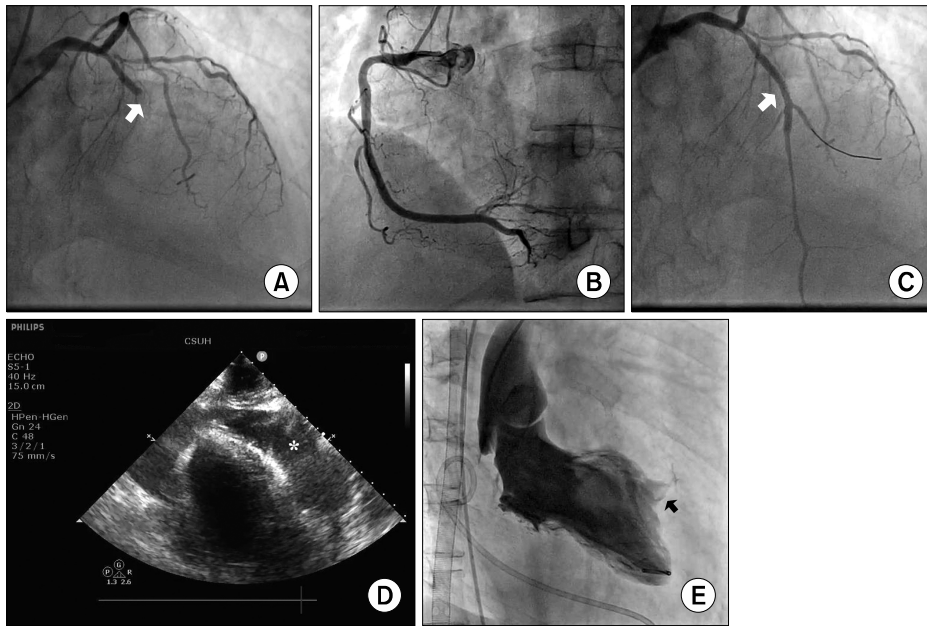


FIG. 2. Coronary angiography revealing total occlusion of the proximal left anterior descending coronary artery (LAD) (arrow) (A) and a normal right coronary artery (B). Percutaneous coronary intervention with everolimus-eluting stent implantation (2.75×24 mm, Synergy XD TM, Boston Scientific, Marlborough, MA) in the proximal LAD (arrow) (C). Trans-thoracic echocardiogram showing large amount of pericardial effusion (asterisk) (D). Left ventriculogram showing myocardial rupture in the anterior myocardium (arrow) (E).

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