Subacute left ventricular free wall rupture and pseudoaneurysm formation: a rare and catastrophic complication of left anterior descending artery occlusion

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Case Description

Left ventricular free wall rupture (LVFWR) is a rare mechanical complication of acute myocardial infarction (AMI), with a reported incidence ranging from 0.8% to 6.2% [1]. Although its occurrence has substantially decreased in the era of percutaneous coronary intervention, LVFWR remains associated with high mortality (75%-90%). It usually occurs within 3-5 days after AMI [2]. Early diagnosis is critical; however, it may be challenging in cases of atypical presentation. A 60-year-old man with a history of surgically repaired ascending thoracic aortic dissection (Bentall procedure), presented to the emergency department with progressively worsening dyspnea over the previous 5 days, following an episode of acute chest pain. On presentation, the patient was in acute pulmonary edema. The electrocardiogram (ECG) demonstrated Q waves with ST-segment elevation in leads V1-V4, and ST-segment elevation in leads I and aVL, raising suspicion of a left ventricular aneurysm (Figure 1A). The initial diagnosis was late-presenting anterior ST-segment elevation myocardial infarction. Coronary angiography revealed ostial occlusion of the left anterior descending artery (LAD), with a high thrombus burden (Figure 1B1). The attempt to revascularize was unsuccessful (Figure 1B2). Transthoracic echocardiography demonstrated an abnormal cavity adjacent to the left ventricle (LV), and a tear at the level of the LV apical anterior wall, findings consistent with subacute LVFWR and pseudoaneurysm formation (Figure 1C1, C2). The diagnosis was confirmed by chest computed tomography (Figure 1D). Following cardiothoracic surgical evaluation, conservative management was recommended. The patient had previously undergone surgery via median sternotomy, and the anticipated presence of adhesions was expected to make reoperation technically challenging and further increase the surgical risk. On the third day after diagnosis, the patient developed hemodynamic and electrical instability, progressing to cardiogenic shock and ultimately death. The diagnosis of subacute LVFWR requires a high index of clinical suspicion, along with a multimodality imaging approach. This case highlights the significant mortality associated with the mechanical complications of AMI, despite timely diagnosis.

What is new

LV free wall rupture after myocardial infarction is rare but carries a high risk of mortality. This case emphasizes the diagnostic value of multimodality imaging in detecting subacute rupture and pseudoaneurysm formation, while highlighting the ongoing challenges in managing high-risk patients.

List of abbreviation

AMI	Acute myocardial infarction
LAD	Left anterior descending artery
LV	Left ventricle
LVFWR	Left ventricular free wall rupture

Conflict of interests

The authors declare that there is no conflict of interest regarding the publication of this article.

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Consent for publication

Written informed consent was obtained from the next kin of the patient

Ethical approval

Ethical approval is not required at our institution to publish an anonymous images case.

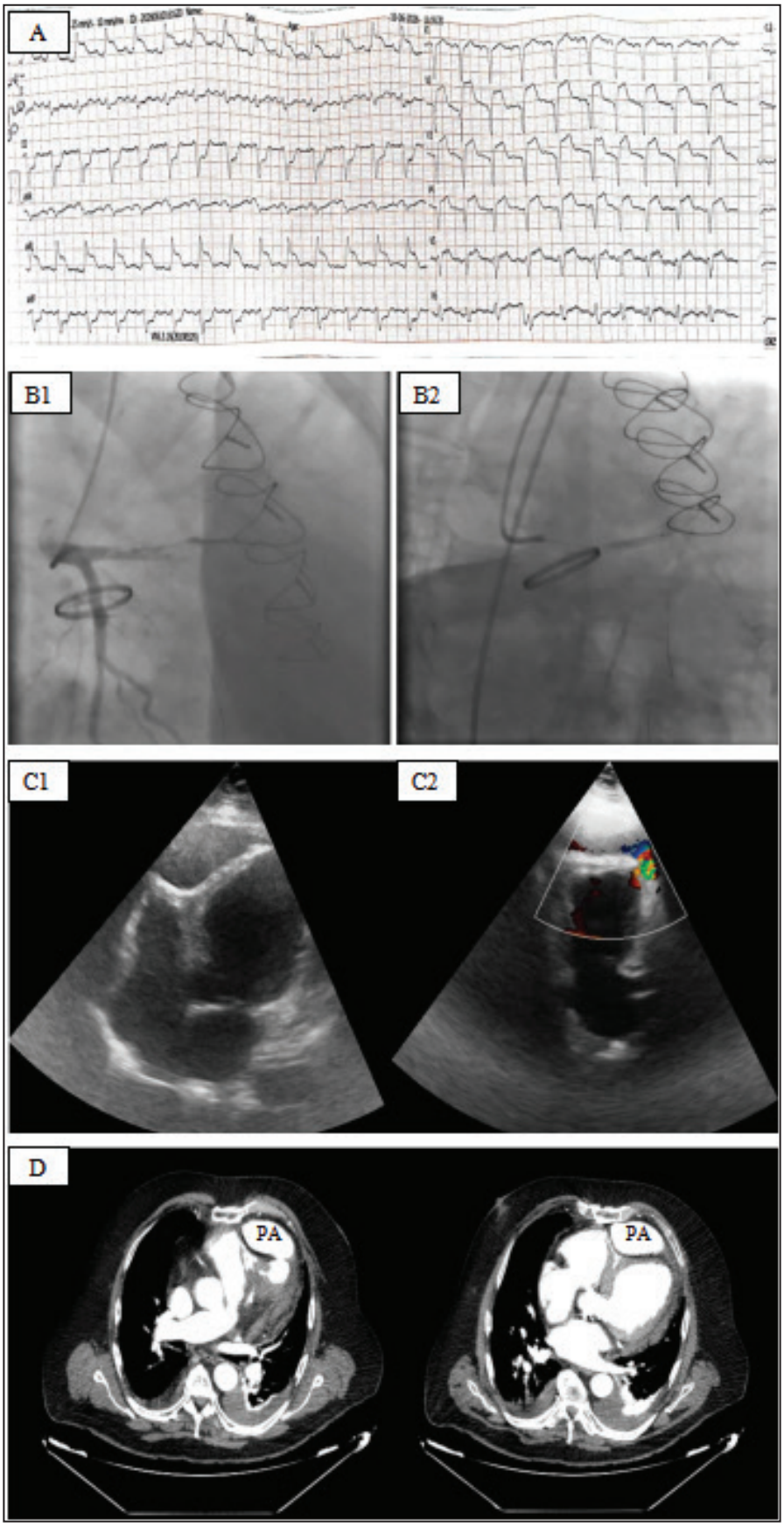


Figure 1. *Diagnostic workflow from patient presentation to final diagnosis. (A) ECG at presentation: ST-segment elevation in leads V1–V4, I, aVL, and ST-segment deviations in leads II, III, aVF. (B) Coronary angiography: ostial occlusion of the LAD (B1) and revascularization attempt (B2). (C1) TTE 4-chamber view: abnormal cavity above the ventricles. (C2) TTE 2-chamber view: tear of the apical anterior LV wall and Doppler study demonstrating abnormal*

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Summary of the case

1	Patient (gender, age)	60 years, male
2	Final diagnosis	Subacute left ventricular free wall rupture and pseudoaneurysm formation
3	Symptoms	Acute pulmonary oedema
4	Medications	Symptomatic treatment given
5	Clinical procedure	-
6	Specialty	Cardiology