

# Giant mobile left ventricular apical thrombus following silent infarction in a young patient: A case report

## Genç hastada sessiz enfarkt sonrası sol ventrikül apikal dev mobil trombüs: Olgu sunumu

İbrahim Halil İnanç<sup>1</sup>, Enes Alıç<sup>2</sup>, Alper Karakuş<sup>1</sup>

<sup>1</sup> Department of Cardiology, Besni State Hospital, Adiyaman, Turkey

<sup>2</sup> Department of Cardiology, Faculty of Medicine, Gaziantep University, Gaziantep, Turkey

ORCID ID of the author(s)

İHİ: 0000-0003-4046-6748

EA: 0000-0003-0517-6243

AK: 0000-0002-9632-395X

### Abstract

Today, percutaneous coronary treatment and anticoagulation therapies are commonly used worldwide, which is why the incidence of reported left ventricular (LV) thrombus decreased. Despite modern methods, we still encounter thromboembolic complications resulting in morbidity and mortality in a large number of patients, especially after silent infarctions. Because of high embolism risk, early detection of LV thrombus is crucial. We present the rare and interesting case of a 34-year-old patient diagnosed with a large, fragmented, very mobile left ventricular apical thrombus after silent myocardial infarction due to total occlusion of left anterior descending coronary artery.

**Keywords:** Silent myocardial infarction, Left ventricular thrombus, Embolism risk

### Öz

Günümüzde perkütan koroner girişimler ve antikoagülan terapilerin dünya çapında yaygın kullanımı nedeniyle sol ventrikülde trombüs oluşma insidansı geçmişe göre daha azdır. Modern metodlara rağmen, özellikle sessiz enfarktlerden sonra olan ve geniş bir hasta popülasyonunda mortalite ve morbidite ile sonuçlanan tromboembolik komplikasyonlar ile karşılaşmaktayız. Yüksek emboli riski nedeniyle sol ventrikül trombüslerinin erken teşhisi kritik önem taşımaktadır. Sol ön inen koroner arterin total tıkanmasına bağlı sessiz enfarkt sonrası sol ventrikül apikal kısımda büyük, fragmente, ileri derecede mobil trombüs tanısı koyduğumuz ilginç ve nadir görülen 34 yaşındaki vakayı sunmaktayız.

**Anahtar kelimeler:** Sessiz miyokard enfarktüsü, Sol ventrikül trombüsü, Emboli riski

## Introduction

Left ventricular (LV) thrombus mostly occurs in case of impaired LV function as a result of LV aneurysm due to prior myocardial infarction (MI). It is one of the most life-threatening complications of those conditions [1].

Patients with large anterior myocardial infarcts, LVEF value of less than 40%, severe akinesis or dyskinesis are under elevated risk of LV thrombus, which is most common in the apex and rare in the septum and the inferolateral wall [2]. The incidence of post-infarction complications is significantly reduced by percutaneous coronary intervention and effective anticoagulant therapy. Despite these widely used treatments, we still encounter complications of silent infarction. Two-dimensional echocardiography has high sensitivity (95%) and specificity (85-90%) for diagnosis and allows assessment of the embolic potential of LV thrombus [3,4].

We herein present our case diagnosed with a giant, very mobile, and fragmented LV thrombus who was successfully treated by left ventriculotomy with concomitant coronary artery bypass surgery.

Corresponding author / Sorumlu yazar:  
İbrahim Halil İnanç

Address / Adres: Besni Devlet Hastanesi,  
Kardiyoloji Kliniği, Adiyaman, Türkiye  
e-Mail: dr.ibrahimhalilinanca@outlook.com

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### Case presentation

A 34-year old male patient with no previous cardiac history was admitted to the emergency department due to difficulty breathing. His complains had continued for a year but worsened after arguing with his mother. He also had a history of admission to the psychiatry clinic because of a smoking addiction but no family history of cardiovascular, pulmonary, or hypercoagulable diseases. His general and systemic examination was unremarkable.

Electrocardiogram (ECG) showed sinus rhythm and non-specific 1 mm elevation in chest derivations V1-V3 without any reciprocal change. Creatinine kinase (CK), CK-MB, troponin I, D-dimer levels and the rest of hematological parameters were within normal range.

2D echocardiography revealed antero-apical akinesia with apical aneurysm, including a large, mobile, two-fragmented thrombus. A highly mobile component sized 24x38 mm and a less mobile component, 16x22 mm in size, was attached to the apex (Figure 1A). Both components had a very thin connection, thus, a remarkably elevated risk of embolism (Figure 1B). Inferior, posterior, and basal segments were contractile enough.

The patient was admitted to the coronary care unit and surgery was planned immediately. He underwent cardiac catheterization before surgery. It revealed 100% occlusion of proximal LAD with distal weak filling via bridge collaterals (Figure 2A), 20% plaques in left CX and normal RCA. LAD also had retrograde filling from RCA via collateral coronary arteries (Figure 2B, 2C). The patient underwent left ventricular thrombectomy with concomitant coronary artery bypass graft surgery (CABG). After the surgery he was well, and no thrombus was detected in follow-ups.

The patient was informed about the study and the consent form was signed.

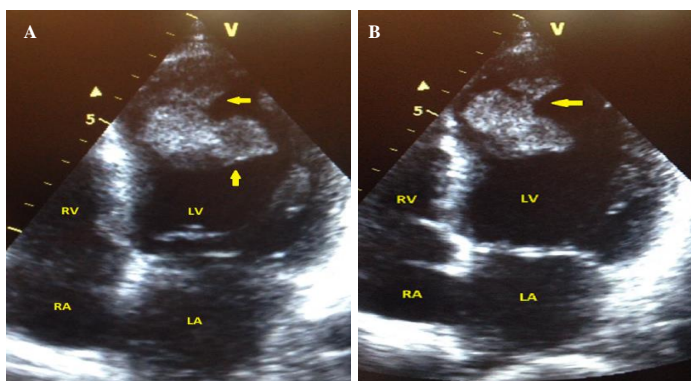


Figure 1: A: Two-dimensional transthoracic echocardiogram (apical 4-chamber view) showing the highly mobile and less mobile components of LV thrombus attached to the apex (arrow). B: Two-dimensional transthoracic echocardiogram (apical 4-chamber view) revealing the thin connection between two components of LV apical thrombus (arrow) (LA: left atrium, LV: left ventricle, RA: right atrium, RV: right ventricle)

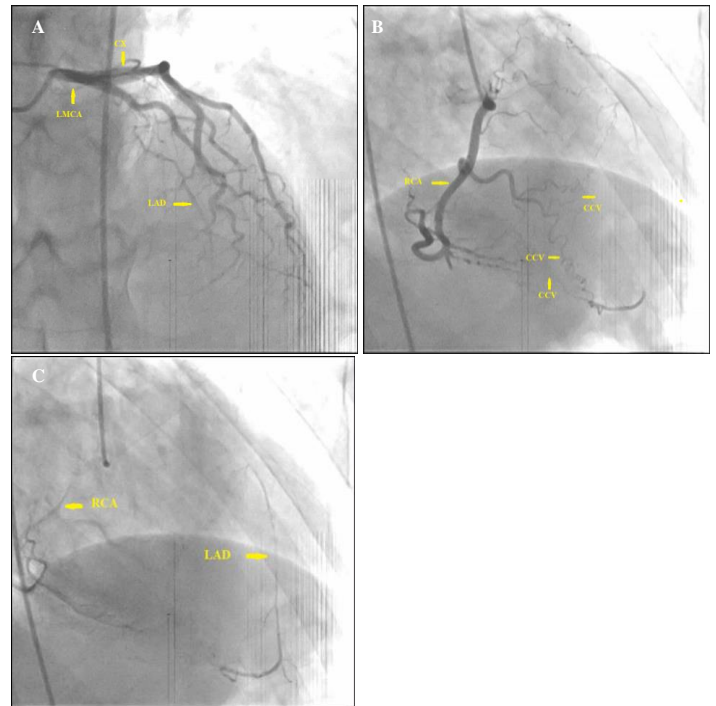


Figure 2: A: Coronary angiogram demonstrating LMCA, CX, occlusion site and distal weak filling via bridge collaterals of LAD (arrow), B: Coronary angiogram demonstrating CCA from RCA to LAD (arrow), C: Coronary angiogram demonstrating retrograde filling of LAD via CCA from RCA (arrow) (CCA: coronary collateral artery, CX: circumflex, LAD: left anterior descending, LMCA: left main coronary artery, RCA: right coronary artery)

### Discussion

LV thrombus is a serious complication of large anterior MI and subsequent heart failure. There is an increased risk of thromboembolism in such patients, especially following silent infarct.

Echocardiography is important to evaluate cardiac function and scan for complications in patients who had prior MI. Patients who suffered from embolic complications, such as cerebrovascular events, should also be scanned to highlight the source of embolism [5,6].

We know that LV thrombus is mostly seen after large anterior infarction. But in our case, left anterior descending artery (LAD) was thin, which revealed that LV thrombus may occur not only after wide infarctions but after limited infarctions as well.

The most of LV thrombi are of the mural, flat and immobile type, with a lower tendency to embolize. Under anticoagulant treatment, some of them may resolve and the rate of systemic emboli may be reduced significantly [7]. Unfortunately, our patient suffered from the rare mobile type. Since the components of thrombus had a very thin connection, there was an elevated risk of systemic embolism. Therefore, immediate surgery was planned following coronary diagnostic catheterization.

The troponin level is a crucial factor to predict postoperative outcomes, such as death or in-hospital cardiac events [8]. In our patient, troponin level was within the normal range and he had an event-free postoperative period.

### Conclusion

Because of the elevated risk of life-threatening embolic events, recognition, and urgent treatment of thrombotic complications due to prior myocardial infarction is crucial. Especially in young patients with silent MI and atypical symptoms, diagnosis can be difficult.

We want to emphasize that 2D echocardiography is a simple, non-invasive, inexpensive, fast, and effective technique to detect LV thrombi or any other urgent cardiac pathologies and it should be part of routine examination of even asymptomatic young patients.

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