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## Case report

## Successful resolution of left ventricular thrombus with apixaban treatment



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## ABSTRACT

A 68 years old male patient with history of dyslipidemia and smoking was admitted to our emergency department with complaint of dyspnea. He was transferred to the coronary care unit with the pre-diagnosis of acute coronary syndrome. In his transthoracic echocardiography, we detected anterior, anterior septal and apical wall akinesia with an LV ejection fraction (EF) of 25%, moderate mitral regurgitation and 13 × 6 mm sized thrombus in the LV. Apixaban treatment 5 mg po bid was started. In the second month transthoracic echocardiography, the thrombus in LV was found to have disappeared. In this report we present a patient whose LV thrombus was successfully treated after myocardial infarction by apixaban.

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## Introduction

Left ventricular thrombus is usually seen in situations with reduced left ventricular (LV) function including dilated cardiomyopathy and LV aneurysms or after myocardial infarction (MI).<sup>1</sup> In observational studies and meta-analyses, anticoagulant therapy is recommended in order to minimize embolization risk.<sup>2,3</sup> An oral vitamin K antagonist, warfarin, has been being used as an anticoagulant for this purpose for a long period of time. New oral anticoagulants (NOACs: dabigatran, rivaroxaban, apixaban, etc.) were found to be non-inferior or superior compared to warfarin in prevention of thromboembolism in patients with non-valvular atrial fibrillation.<sup>2</sup> Nevertheless, the data about the role of new oral anticoagulants in the management of LV thrombus is deficient.

## Case report

A 68 years old male patient with history of dyslipidemia and smoking was admitted to our emergency department with complaint of dyspnea. The ECG was in sinus rhythm and there were precordial T wave negativity. In his initial evaluation, the consecutive two troponin levels were greater than the upper reference limit. After then he was transferred to the coronary care unit with the pre-diagnosis of acute coronary syndrome. In his transthoracic echocardiography, we detected anterior, anterior septal and apical wall akinesia with an LV ejection

fraction (EF) of 25%, moderate mitral regurgitation and 13 × 6 mm sized thrombus in the LV (Fig. 1). The thrombus was detected to be mobile and attached to the distal portion of the anterior septum. The D-dimer level was greater than the upper reference level. In coronary angiography, left anterior descending artery was found to be totally occluded in its ostium. In positron emission tomography, the anterior wall was detected to be non-viable. As a result, the patient was decided to be managed medically. Aspirine 100 mg po qd, clopidogrel 75 mg po qd and warfarin 5 mg po qd were prescribed and then he was discharged. The patient did not come for early outpatient visit for measurement of international normalized ratio (INR). After 30 days of discharge, he was admitted to our outpatient clinic with gastrointestinal (GI) bleeding. In his laboratory examination, he was found to have an INR of 10. Then, he was hospitalized and the warfarin was stopped. Both upper and lower GI endoscopy were performed by gastroenterology clinic and there was not any active bleeding points in the gut. The bleeding was considered to be due to warfarin overdose. During follow up, the patient was hemodynamically stable. In the control transthoracic echocardiography, the thrombus was found to be persisted with its previously measured dimensions. His body weight and creatinine level were in suitable range for apixaban treatment (weight:72 kg and creatinine:0,9 mg/dl). Since the patient was non-compliant and could not tolerate warfarin therapy, apixaban 5 mg po bid was started. In the second month transthoracic echocardiography, the thrombus in LV was found to be disappeared (Fig. 2).

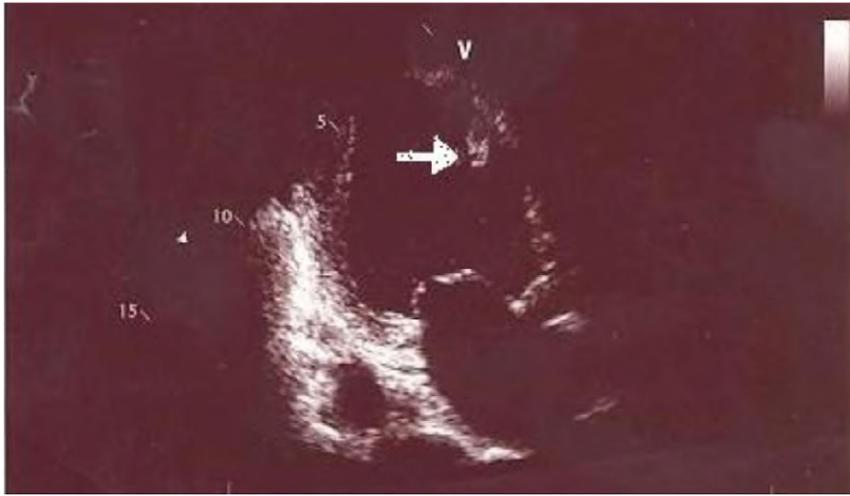
## Discussion

In this report we present a patient whose LV thrombus was successfully treated after myocardial infarction by apixaban. LV thrombus after MI is related to worse prognosis and increased thromboembolic risk.<sup>3</sup>

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**Fig. 1.** Two dimensional echocardiogram shows left ventricular apical thrombus (13 × 6 mm).

Anticoagulation with dual antiplatelet therapy (triple antithrombotic therapy) increases bleeding risk substantially.<sup>4</sup> As a result, time of initiation and duration of triple antithrombotic therapy should be adjusted according to the atherothrombotic, cardioembolic and bleeding risk of the patients. Our patient had triple therapy for one month because of high bleeding risk (HAS-BLED score greater than 2).<sup>4</sup> After one month, clopidogrel has stopped and we have continued with aspirin and apixaban. LV thrombus resolution with warfarin therapy was demonstrated in some previous observational studies and meta-analyses.<sup>3,5</sup> The role of new oral anticoagulants in reducing thrombo-embolic risk in patients with LV mural thrombus is needed to be clarified. The slow onset of action, need for dose adjustments and regular monitoring to provide adherence to the narrow therapeutic range, dietary restrictions, and multiple drug interactions limit the use of vitamin K antagonists.<sup>6</sup> NOACs do not have these kind of limitations and may also reduce the risk of hemorrhagic stroke.<sup>6</sup> In the ARISTOTLE trial, apixaban was shown to have superior efficacy in reducing stroke, systemic embolism, and all cause mortality compared to warfarin.<sup>7</sup> In 2014 American Heart Association stroke guidelines, NOACs are recommended for three months in patients with LV mural thrombus intolerant to warfarin with a new class 2b recommendation and a level of evidence C.<sup>8</sup> We stopped warfarin and started apixaban in our patient because of highly increased supratherapeutic INR and gastrointestinal bleeding. In the second month of therapy, LV thrombus was found to be completely resolved.

There are several limitations of the use of NOACs. The careful use in elderly and patients with renal impairment is recommended.<sup>9</sup> The data is scant regarding the use of NOACs in pregnant women, pediatric patients and the patients with valvular disease.<sup>9</sup> Except dabigatran, the absence of approved antidotes in the case of life-threatening hemorrhage or surgery is another limitation for their use.<sup>9</sup>

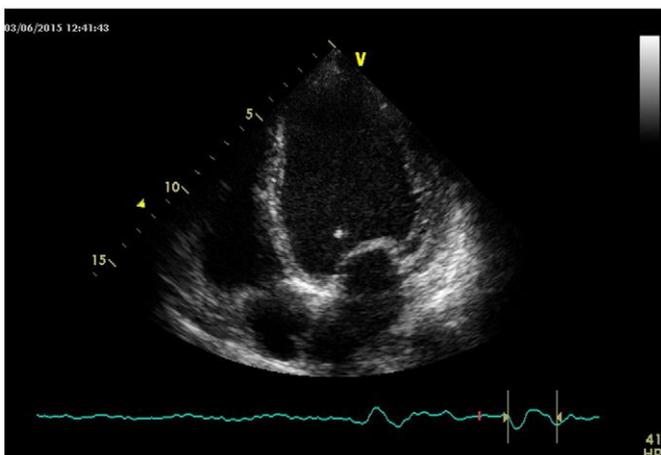
In conclusion; our case showed that LV thrombus can be successfully treated by apixaban. However, randomized clinical trials are needed in order to elucidate and confirm the use of NOACs as an alternative to warfarin.

#### Conflict of interest

The authors declare that they have no conflicts of interest related to the publication of this manuscript.

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**Fig. 2.** Apical mural thrombus resolved completely after 8 weeks treatment with apixaban.