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Case Report Open Access

Resolution of Left Ventricular Thrombus after Dabigatran Therapy in Two Patients with Old Anteroseptal Myocardial Infarction

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Abstract

Dabigatran has been used recently as an alternative to warfarin therapy for the prevention of thromboembolism in patients with myocardial infarction or atrial fibrillation, but treatment of established intracardiac thrombus with dabigatran has seldom been reported. We report two patients with left ventricular (LV) thrombus who were successfully treated with dabigatran. The first patient was a 52-year-old man with no clear symptoms who was referred for investigation of abnormal electrocardiography findings, and the second patient was a 51-year-old man with recent onset of heart failure and a history of chest pain 1 month previously. Both patients were diagnosed with old anteroseptal myocardial infarction after echocardiography showed abnormal LV wall motion and LV thrombus. The thrombus was thought to be chronic in the first patient, and to have formed within the preceding month in the second patient. After treatment with dabigatran 220 mg/day and antiplatelet drugs, repeat echocardiography showed resolution of the thrombus after 6 weeks and 2 weeks, respectively. These cases illustrate that dabigatran 220 mg/day may be useful for the treatment of established LV thrombus.

Keywords: Dabigatran; Myocardial infarction; Left ventricular thrombus; Thrombolysis

Introduction

Anteroseptal myocardial infarction (MI) is associated with formation of left ventricular (LV) thrombus, [1-3] which may result in embolic complications [4,5]. LV thrombus can resolve after warfarin therapy, [6] and has recently been shown to resolve after dabigatran therapy [7]. Dabigatran has also been used as an alternative to warfarin for prophylaxis against thromboembolism in patients with atrial fibrillation [8]. Dabigatran is thought to have a stronger thrombolytic effect compared with other drugs that enhance susceptibility to fibrinolysis [7,9]. Here, we describe two patients with old anteroseptal MI and LV thrombus, who were treated with dabigatran resulting in resolution of thrombus.

Case Reports

Case 1

A 52-year-old man was referred to our department because electrocardiography showed abnormal Q waves in V1–V4. He did not present with a clear history of chest pain. Echocardiography showed apical hypokinesis and LV thrombus measuring 7 × 9 mm (Figure 1a). He was diagnosed with old anteroseptal MI because there was no elevation in cardiac enzyme levels, no history of chest pain, and no ST elevation on electrocardiography. Cardiac computed tomography confirmed LV thrombus (Figure 1b), and showed severe stenosis of the proximal left anterior descending artery (LAD). His creatinine level was 0.81 mg/dL and his estimated glomerular filtration rate was 79.0 ml/min/1.73 m^2. He was treated as an outpatient with dabigatran 220 mg/day (Prazaxa®: Nippon Boehringer-Ingelheim, Tokyo, Japan), aspirin 100 mg/day, and clopidogrel 75 mg/day, and was scheduled for percutaneous coronary intervention. Repeat echocardiography after 6 weeks showed resolution of LV thrombus (Figure 1c). The longest activated partial thromboplastin time was 43.6 s. Percutaneous coronary intervention resulted in successful revascularization of the LAD and improvement of LV wall motion, and dabigatran therapy was discontinued.

Case 2

A 51-year-old man was referred to our department because of heart failure. Electrocardiography showed abnormal Q waves in V2–V4. Echocardiography showed anteroseptal akinesis and LV thrombus measuring 24 × 19 mm (Figure 2a). The patient reported chest pain approximately 1 month previously. He was diagnosed with old anteroseptal MI. Cardiac computed tomography showed LV thrombus and complete occlusion of the mid LAD (Figure 2b). His creatinine level was 1.31 mg/dL and his estimated glomerular filtration rate was 46.7 ml/min/1.73 m^2. He was treated for heart failure with infusion of heparin (15,000 U/day) and human atrial natriuretic peptide (0.025 μg/kg/min). Three days after admission, heparin infusion was discontinued and he was started on dabigatran 220 mg/day and aspirin 100 mg/day. Repeat echocardiography and cardiac computed tomography after 2 weeks showed resolution of the LV thrombus (Figure 2c,d). The longest activated partial thromboplastin time was 36.8 s. Dabigatran 220 mg/day was continued because LV wall motion did not improve. There was no further evidence of thromboembolism during follow-up.

Discussion

Here, we report two patients who developed LV thrombus after anteroseptal MI, who were treated with dabigatran 220 mg/day resulting in resolution of thrombus. In the first case, it was unknown when the LV thrombus formed, and resolution of the thrombus was confirmed 6 weeks after the start of dabigatran therapy. In the second case, LV thrombus was thought to have formed during the preceding month. This thrombus reduced in size to 15 × 12 mm after 1 week of dabigatran therapy, and complete resolution was confirmed after 2

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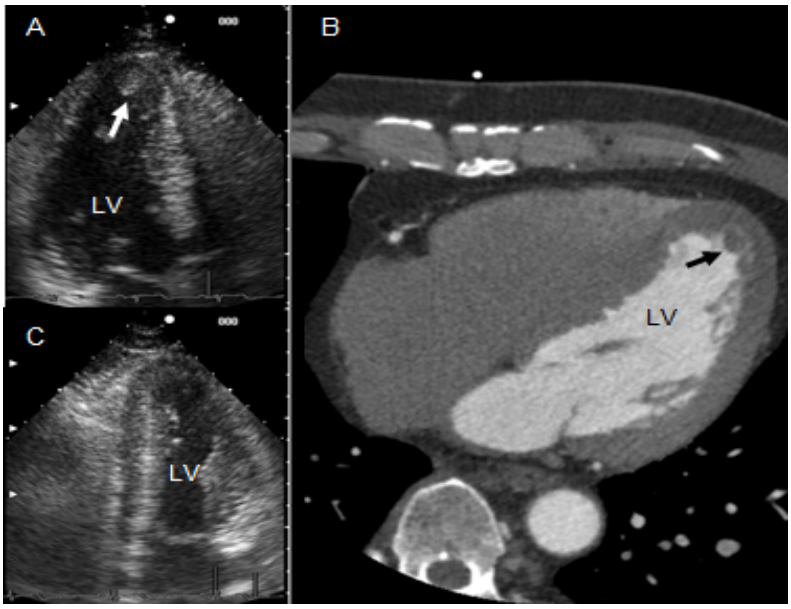
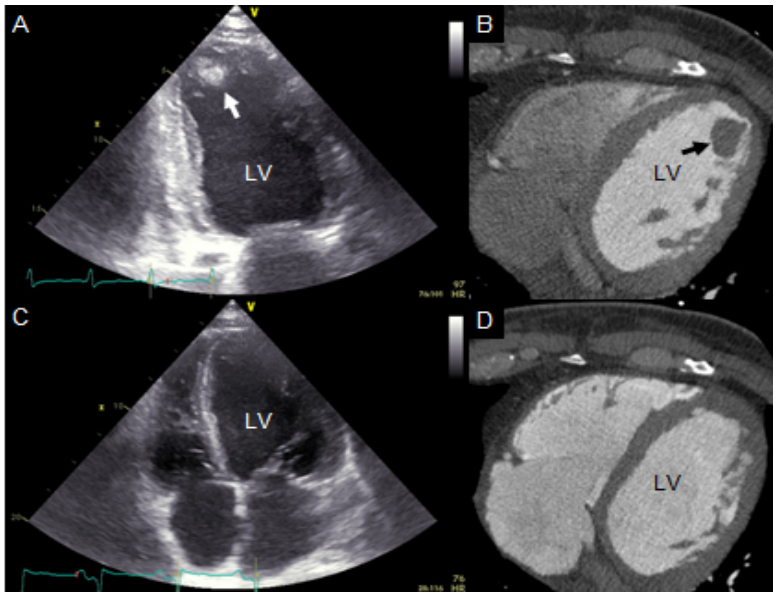


a) Apical 2-chamber view of the echocardiography showing a left ventricular (LV) thrombus (7 × 9 mm) at the apex.
b) Computed tomography (CT) of the contrast showing the presence of the LV thrombus.
c) Apical 2-chamber view of the echocardiography showing resolution of the LV thrombus 6 weeks after administration of dabigatran.

Figure 1: Case 1 Imaging findings.



a) Apical 2-chamber view of the echocardiography showing a left ventricular (LV) thrombus (24 × 19 mm) at the apex.
b) Computed tomography (CT) of the contrast showing the presence of the LV thrombus.
c) Apical 2-chamber view of the echocardiography showing resolution of the LV thrombus 2 weeks after administration of dabigatran.
d) CT showing resolution of the LV thrombus 2weeks after administration of dabigatran.

Figure 2: Case 2 Imaging findings:

Report (yr.)	Patient Age (yr.) / Sex	Thrombus site	Underlying disease	Diagnostic tests	Dabigatran dose	Thrombus disappearance period
Vidal A et al. [16] (2012)	59 / F	Left atrial appendage	AF	TTE	300 mg/day	4 weeks
Nagamoto Y et al. [10] (2013)	77 / M	Left ventricular apex	OMI anterior	UCG, CT	220 mg/day	27 days
Morita S et al. [17] (2013)	72 / F	Left atrial appendage	AF	TTE	300 mg/day	4 months
Takeuchi H [18] (2013)	73 / M	Pulmonary vein	AF	64-MDCT	300 mg/day	3 months
Kaku B [19] (2013)	59 / M	Left atrial appendage	AF	UCG	300 mg/day	3 weeks

Table 1: List of previous publications where Dabigatran administration resulted in resolution of thrombus.

weeks of dabigatran therapy. It is difficult to determine whether LV thrombus is acute or chronic. It was previously reported that chronic LV thrombus after MI did not resolve after vitamin K antagonist therapy [10]. In our patients, the thrombolytic action of dabigatran resulted in resolution of LV thrombus, even though the thrombus may have been chronic in one case, and the thrombus did not recur during dabigatran therapy. However, it is also possible that dabigatran and treatment to inhibit thrombus formation (such as heparin in case 2) may have simultaneously contributed to dissolution. LV thrombus is reported to occur in up to 60% of patients with anteroseptal MI [1].

The reduction in LV wall motion after anteroseptal MI results in thrombus formation at the apex, and there is a causal relationship between LV aneurysm and LV thrombus formation [11]. Thrombus can be treated with warfarin, [12,13] but dabigatran can be considered an alternative to warfarin therapy. Five previous cases of dabigatran administration resulting in resolution of thrombus have been reported [7,14-17]. The reported doses of dabigatran ranged from 220 to 300 mg/day, and resolution was confirmed after 3 weeks or longer (Table 1). Dabigatran is thought to be suitable for the treatment of thrombus because it enhances susceptibility to fibrinolysis in a similar manner to warfarin [18]. In our two cases, dabigatran had a thrombolytic effect at a dose of 220 mg/day. Dabigatran is associated with a lower risk of hemorrhage compared with warfarin, which is useful when given in combination with antiplatelet therapy in patients with ischemic heart disease [19].

The two cases presented here illustrate that LV thrombus formation after anteroseptal MI can be resolved by treatment with dabigatran 220 mg/day for a few weeks.

Conflict of Interest

None declared.

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