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Case Report

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STEMI Due to Big Ostial Left Main Thrombus Extending Into Aorta: Challenging Situation With No Clear Guidelines

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Abstract

Extensive left main (LM) coronary artery thrombus is a rare and life-threatening angiographic finding with usual dramatic clinical presentation including hemodynamic instability and sudden cardiac death. The proper management of a big LM thrombus extending into aorta remains a challenging issue with no clear guidelines. In the following case report we present a 45-year-old patient with no apparent risk factors for coronary artery disease who presented with acute infero-lateral ST-elevation myocardial infarction (STEMI). The examination was performed using a right transfemoral approach and it revealed the presence of a large mobile, hazy mass within the left main coronary artery (LMCA) extending into the aorta. To confirm the extension of that structure we performed intravascular ultrasound (IVUS) which revealed a circumferential mass in the LMCA extending with its two-thirds into the aorta with no evidence of atherosclerotic plaques. After a long discussion within our Heart team we decided to transfer the patient for urgent surgical removal. Such decision was made with regard to the large size of the mass and in order to avoid systemic or distal embolization into coronary arteries. Perioperative transesophageal echocardiography (TEE) confirmed diagnosis and excluded presence of patent foramen ovale (PFO). Surgical removal was done successfully with complete resolution of ST-segment elevation and rapid fall of cardiac enzymes to normal levels. Postoperative course was uneventful. The mass was defined as a thrombus by pathophysiology examination. Patient was discharged well from our hospital after 1 week.

Keywords: Acute coronary syndromes; Left main disease; STEMI

Introduction

Extensive left main (LM) coronary artery thrombus is a rare and life-threatening angiographic finding with usual dramatic clinical presentation including hemodynamic instability and sudden cardiac death [1-3]. Fibrous cap rupture of an atherosclerotic plaque followed by thrombus formation is the most common mechanism while other factors including hypercoagulable states can be involved [2]. The proper management of a big LM thrombus extending into aorta remains a challenging issue with no clear guidelines. The following case report describes a successful surgical removal of the large LM main coronary artery thrombus in the setting of ST-segment elevation myocardial infarction.

Case Report

A 45-year-old patient with no apparent risk factors for coronary artery disease was referred from a peripheral hospital to our catheterization laboratory for a primary percutaneous coronary intervention (PCI). He presented with retrosternal burning chest pain, he was hemodynamically stable and the ECG showed acute infero-lateral ST-elevation myocardial infarction (Fig. 1). The examination was performed using a right transfemoral approach and it revealed the presence of a large mobile, hazy mass within the left main coronary artery (LMCA) extending into the aorta while left anterior descending (LAD), left circumflex (LCX) and the right coronary artery (RCA) appeared angiographically normal (Figs. 2-4) (Supplementary videos 1 and 2, www. cardiologyres.org). To confirm the extension of that structure we performed intravascular ultrasound (IVUS) which revealed a circumferential mass in the LMCA extending with its two-thirds into the aorta with no evidence of atherosclerotic plaques (Fig. 5). After a long discussion within our Heart team we decided to transfer the patient for urgent surgical removal. Such decision was made with regard to the large size of the mass and in order to avoid systemic or distal embolization into coronary arteries. Perioperative transesophageal echocardiography (TEE) equally showed a large pendulating mass in the LMCA expanding to the aorta (Fig. 6). Surgical removal was done successfully. The patient was transferred to the coronary intensive care unit hemodynamically stable. The ST elevation immediately subsided. Troponin T high sensitivity peak measurement was initially 911 ng/L (Table 1) and during the following days presented a declining course. Postoperative course was uneventful. The mass was defined as a thrombus by pathohistology examination (Fig. 7). Patient was discharged well from our hospital after 1 week admission to

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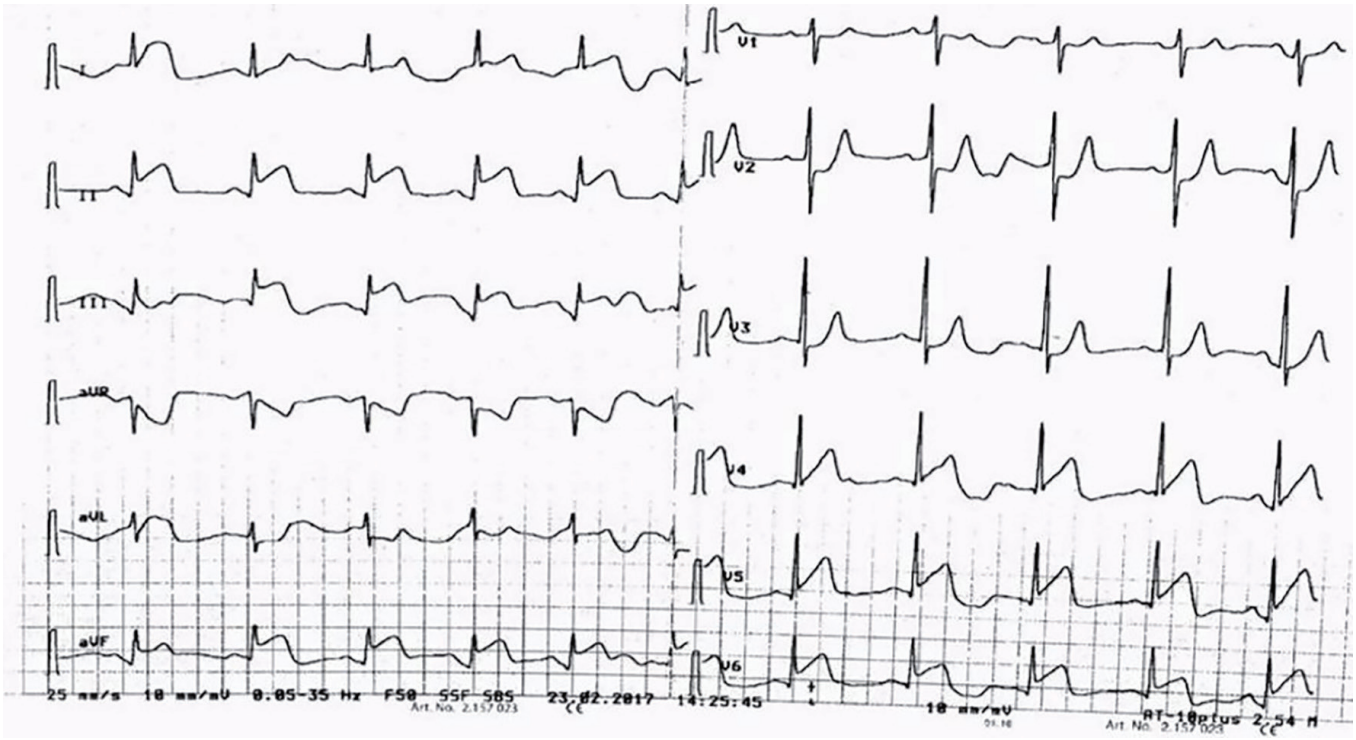

Figure 1. ECG showing STE in infero-lateral leads. ECG: electrocardiogram; STE: ST elevation.

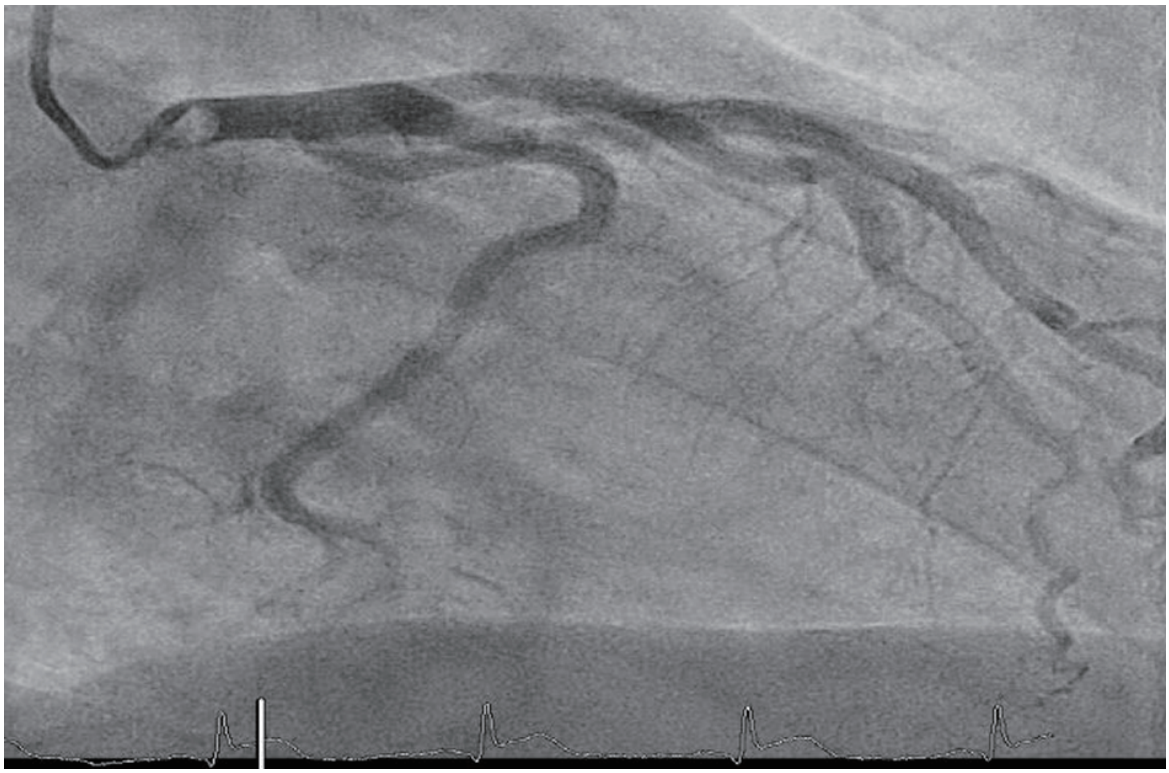

Figure 2. Coronary angiography RAO 8/Caudal 0 view showing big ostial LM thrombus with normal LAD, LCX and RIM arteries. RAO: right anterior oblique; LM: left main; LAD: left anterior descending; LCX: left circumflex; RIM: ramus intermedius artery.

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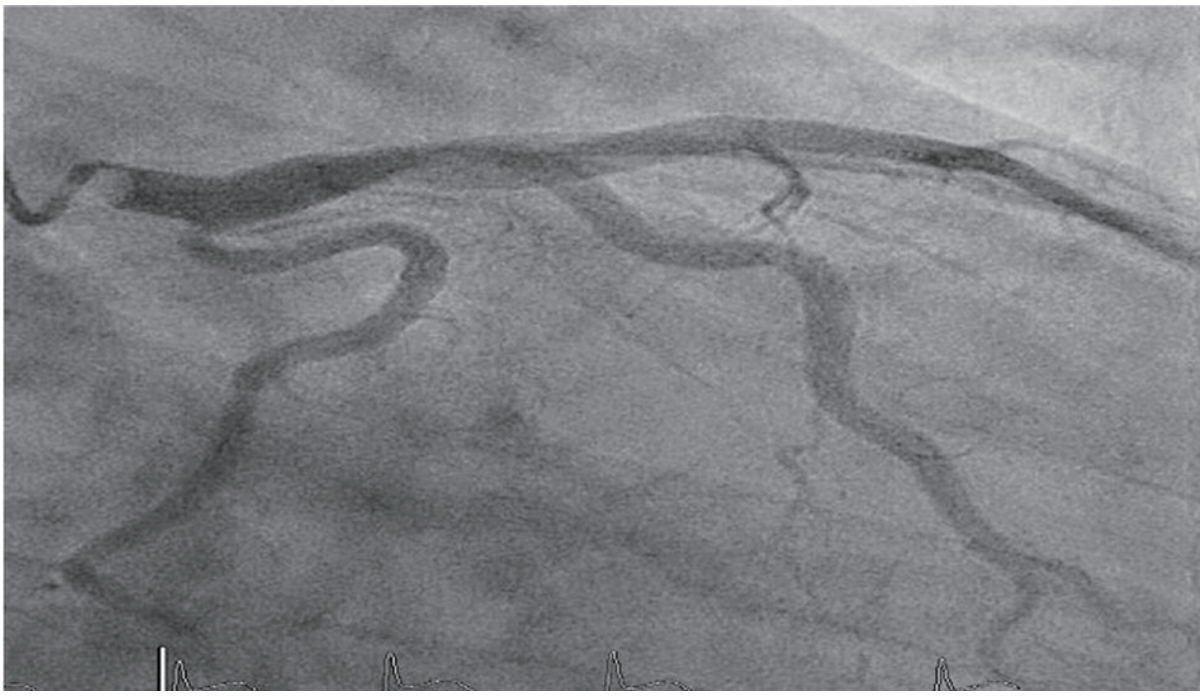

Figure 3. Coronary angiography RAO 30/Caudal 18 view showing big LM thrombus with normal LAD, LCX and RIM arteries. RAO: right anterior oblique; LM: left main; LAD: left anterior descending; LCX: left circumflex; RIM: ramus intermedius artery.

Figure 4. Coronary angiography LAO 52/Caudal 15 view showing normal RCA. LAO: left anterior oblique; RCA: right coronary artery.

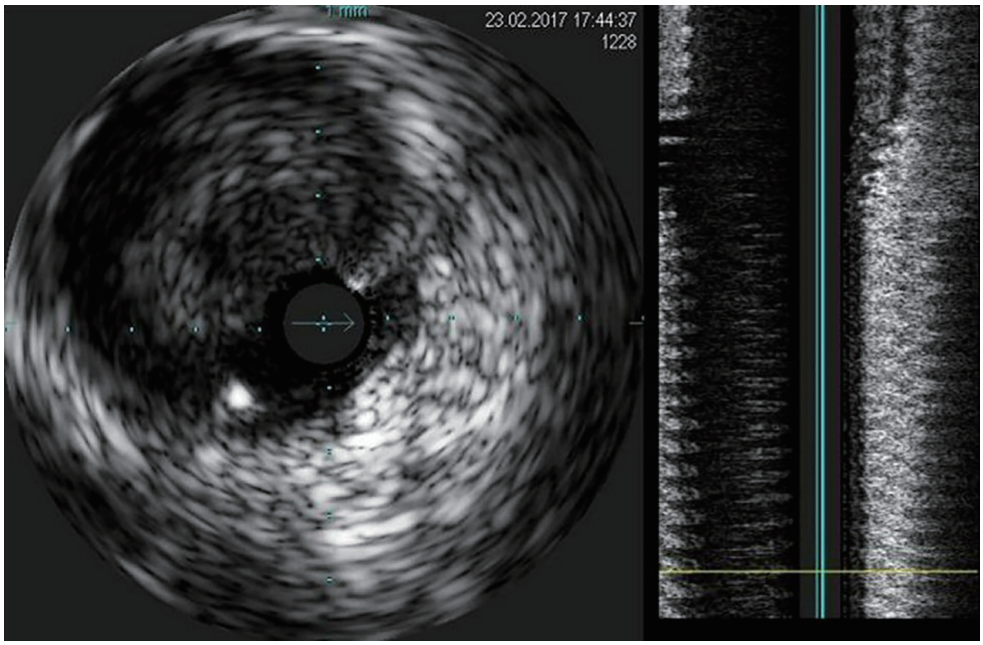

Figure 5. IVUS image showing big ostial LM thrombus. IVUS: intravascular ultrasound; LM: left main.

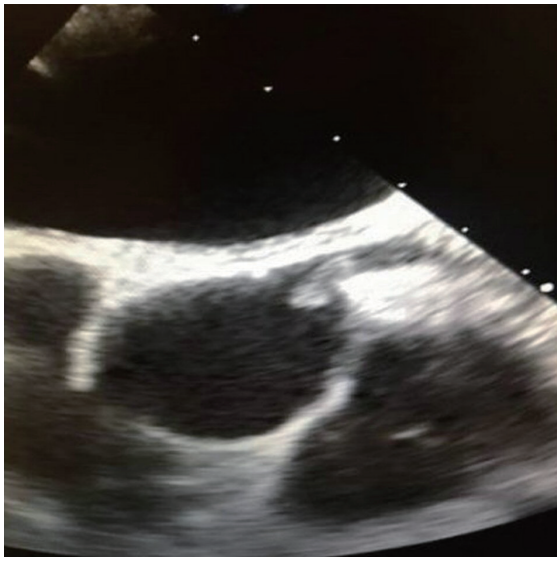

Figure 6. Intraoperative TEE showing big ostial LM thrombus extending into aorta. TEE: transesophageal echocardiography; LM: left main.

Table 1. Laboratory Tests at Presentation

Test	Results
CK total (< 190 U/L)	920 U/L
Myoglobin (28 - 72 µg/L)	600 µg/L
Troponin T high sensitivity (< 14 ng/L)	911 ng/L
NT-proBNP (< 85.8 ng/L)	18 ng/L
Creatinine (44 - 80 µmol/L)	66 µmol/L

CK: creatine kinase; NT: N-terminal; BNP: brain natriuretic peptide.

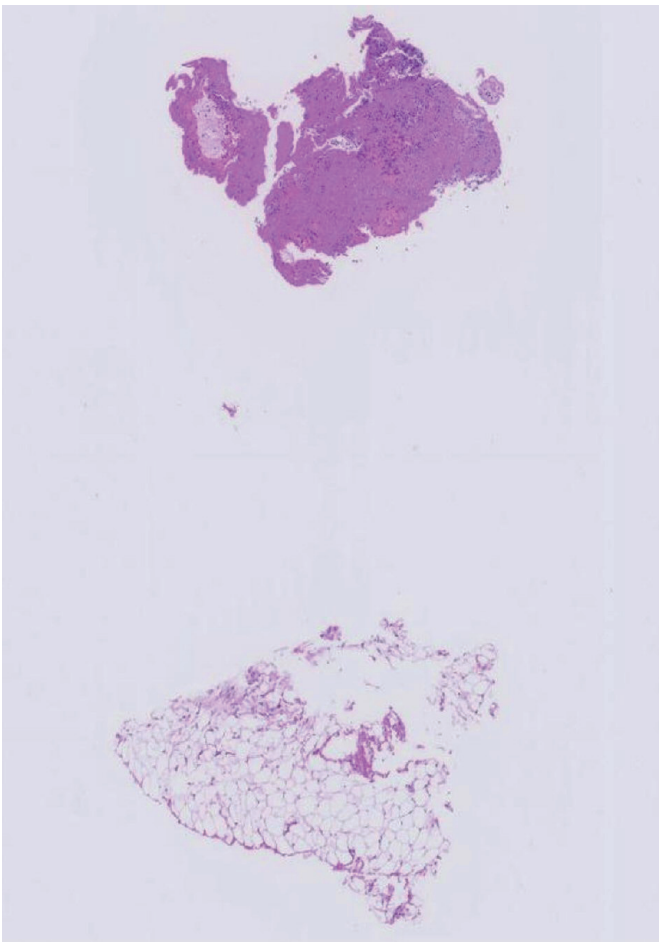

Figure 7. Histopathological picture from obtained thrombus material.

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another hospital near to his residence in another canton.

Discussion

Large size LMCA thrombus is a rare and life-threatening angiographic finding with usual dramatic clinical picture including hemodynamic instability and sudden cardiac death. The proper management in this situation remains a challenging issue with no clear guidelines [4, 5]. In our case, we decided to refer the patient for urgent surgical removal in order to avoid thrombus disintegration and potential systemic or distal coronary embolization. Surgical removal was done successfully with complete resolution of ST-segment elevation and rapid fall of cardiac enzymes to normal levels.

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