

Letter to the Editor

Decision making and devices approach in a case of left main coronary artery thrombus^{☆,☆☆}

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ARTICLE INFO

Article history:

Received 12 November 2013

Accepted 28 December 2013

Available online 8 January 2014

Keywords:

Left main coronary artery

Thrombus

Intravascular ultrasound

Dear Editor

A left main coronary artery (LMCA) thrombosis is a life-threatening condition demanding immediate therapeutic management. Clinical presentation varies and often includes -ST or non-ST elevation myocardial infarction (STEMI/NSTEMI), unstable angina (UA), and sudden cardiac death (SCD) [1].

A 56-year-old woman was admitted to our Coronary Care Unit for acute chest pain lasting for half an hour, radiating to the jugulum and left shoulder and resolved spontaneously. She was hypertensive but she did not have past medical history. On examination, heart rate (HR) was 79/min, and blood pressure (BP): 150/90 mmHg. Grace

risk score and Crusade bleeding score were low (78 and 17 points respectively).

Electrocardiogram showed normal sinus rhythm (79 bpm) and right bundle branch block (RBBB) (Fig. 1). Echocardiography study revealed preserved global left ventricular ejection fraction (EF 55%), no segmentary hypokinetic segments. Patient gave history of similar pain at rest, a day before admission. Cardiac I troponin on admission was negative and so also at the subsequent samplings. Given the peculiarity of chest pain that had the characteristic of angina and the presence of cardiovascular risk factors, standard medical management based on pharmacotherapy with aspirin, clopidogrel, fondaparinux, bisoprolol, rosuvastatin and ranitidine.

The patient was scheduled for invasive coronary angiography (CAG), that showed subocclusion of the distal left main coronary artery (LMCA) engaging the emergence of the left coronary artery (LCA) and left circumflex coronary artery (LCx) (Fig. 1). No other significant lesions were observed. Because of the clinical stability of the patient, no chest pain recurrence, and the likely thrombotic nature of the angiographic image of minus; a decision to administer a 12-hour infusion of abciximab (GpIIb/IIIa receptor inhibitor- GpIIb/IIIa RI), was made.

In order to clearly evaluate the features of LMCA lesion, intravascular ultrasound (IVUS) examination was performed, confirming the presence of critical calcific plaque involving distal LMCA and its bifurcation into LCA and LCx, and a superimposed thrombus, unresponsive to GpIIb/IIIaRI treatment (Fig. 2).

Then, it made an unsuccessful attempt to angioplasty and thrombus-aspiration with AngioJet® Ultra Thrombectomy System, Bayer Health Care. On angiographic and IVUS data, so it was recommended a myocardial revascularization by coronary artery bypass grafting (CABG), that the patient refused. She discharged home on dual antiplatelet therapy including aspirin and prasugrel stressing her high-risk clinical condition and the importance of a prompt surgical revascularization.

LMCA thrombus is caused by a variety of pathologic causes including secondary to plaque rupture with subsequent thrombus formation, persistent hypercoagulable state, cocaine use, and vasospasm. The incidence of LMCA thrombus is unknown, but is thought to be ~0.8%. This is likely an underrepresentation given that presentation may be sudden cardiac death that may not be classified as being secondary to LMCA thrombus.

In the first time, like in our case, approach to management of LMCA thrombus is often conservative in patients with following conditions: no

[☆] This statement is to certify that all authors have seen and approved the manuscript being submitted, have contributed significantly to the work, attest to the validity and legitimacy of the data and its interpretation, and agree to its submission to the *International Journal of Cardiology*. We attest that the article is the authors' original work, has not received prior publication and is not under consideration for publication elsewhere. We adhere to the statement of ethical publishing as appears in IJC 2013 (Shewan LG et al 2013 in press).

^{☆☆} On behalf of all co-authors, the corresponding author shall bear full responsibility for the submission.

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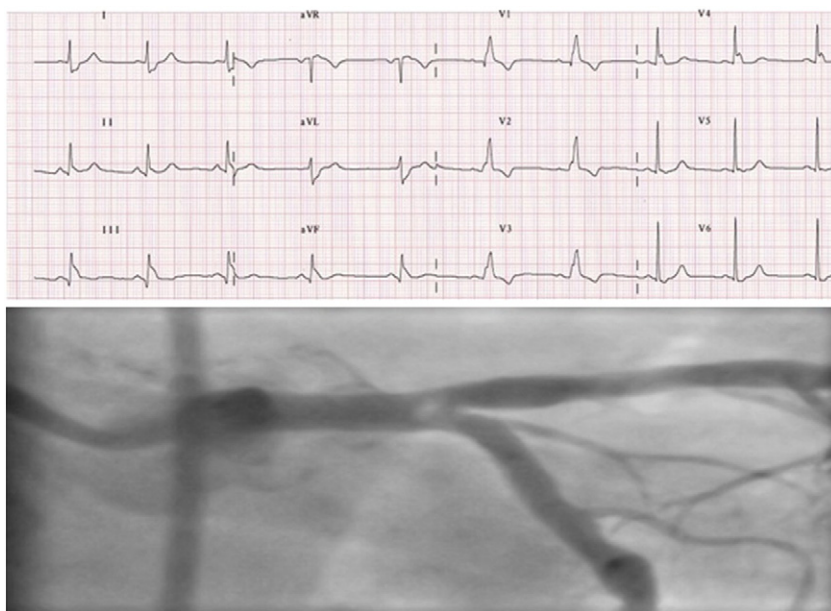


Fig. 1. Upper panel: ECG showing sinus rhythm (79 bpm) and right bundle branch block. Lower panel: coronary angiography showing subocclusion of distal left main coronary artery (LMCA) involving the emergence of the left coronary artery and left circumflex coronary artery.

evidence of ongoing ischemia, absence of significant flow-limiting disease in LMCA, absence of significant atherosclerotic disease in remaining portions of coronary three, and TIMI III flow in LAD and LCx [2]. Conservative management includes 24–48 h of IV heparin or glycoprotein IIb/IIIa inhibition, and aspirin. After conservative treatment, patients should undergo repeat angiography to reevaluate the thrombus to determine resolution versus further intervention [3]. Intravascular ultrasound (IVUS) use is controversial; IVUS guidance is helpful in assessing vessel size, adequate stent expansion, and absence of stent malposition [4].

Non-conservative management includes percutaneous intervention including stenting, and mechanical aspiration thrombectomy or CABG. Several aspiration or active thrombectomy have been introduced to interventional cardiology. There is no evidence supporting routine thrombus extraction during primary PCI in terms of mortality or a reduction in major adverse cardiac events [5]. On the other hand, several single-center studies have shown that manual thrombus aspiration contributed to better epicardial flow, lower risk of distal embolization and no reflow in ST elevation AMI patients [6]. It is not clear if this strategy can be incorporated into routine treatment of LMCA thrombosis, but in selective cases it might be useful to start with catheter aspiration. This procedure is both technically simple and safe. However, there is no reliable evidence that aspiration thrombectomy is more effective than surgical revascularization in such cases.

Most of the clinical risk-scoring system used for unprotected LMCA has been extrapolated from patients treated with CABG. Recently, the

application of a coronary anatomical risk score based on lesion severity and extent (SYNTAX score) has provided insight into both patient selection [7]. In our case the patient have a distal LM lesion that in most cases treated as true bifurcation lesions. True distal bifurcation lesions may be treated either by a single-stent or by a two-stent strategy. Choice of strategy is based on vessel and lesion characteristics but also on operator experience and expertise. The provisional stenting is a single-stent strategy, although it allows the placement of a second stent if required. More complex lesions may require double-stent strategy. In this case, after mechanical aspiration thrombectomy failure, we opted to surgery that should be preferred in these following situations: patients with heavy calcified LM disease; reduced LV function; diabetics; multiple vascular disease suitable for CABG (particularly with low EuroSCORE); distal LM bifurcation lesion with reduced LV function or with occluded RCA or with additional complex lesions on the other coronary vessels (high SYNTAX score) [8].

The new anti-platelet agents (prasugrel and ticagrelor) could improve the safety of PCI in complex LM lesions, but they need to be evaluated in this particular setting. The future EXCEL trial (evaluation of Xience Prime or Xience V-eluting stent vs. CABG for effectiveness of LM revascularization) will evaluate the safety and efficacy of PCI with Xience Prime or Xience V EES vs. CABG in patients with ULMCA disease with a low or intermediate SYNTAX score (<33) for which choosing of appropriated therapeutic strategy is currently often problematic [9].

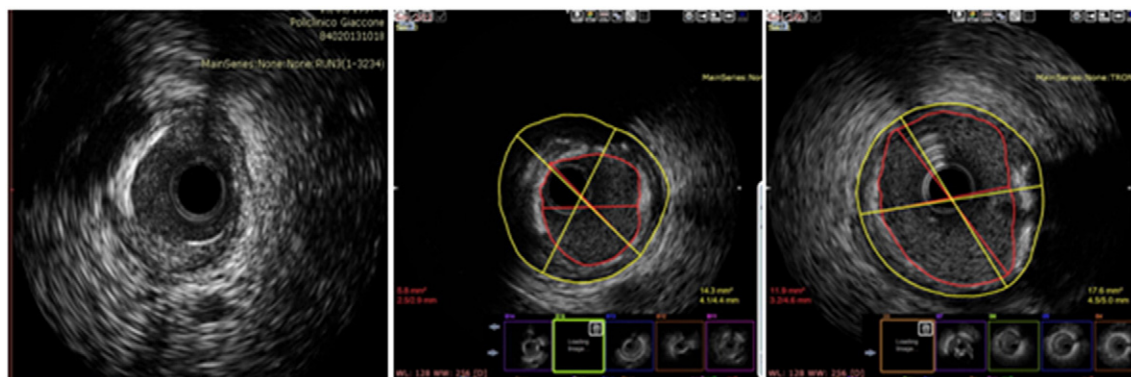


Fig. 2. IVUS showing the presence of critical calcific plaque involving distal LMCA and its bifurcation into LCA and LCx, and a superimposed thrombus.

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