ACUTE LEFT VENTRICULAR THROMBUS POST ACUTE MYOCARDIAL INFARCTION NEEDING CORONARY REVASCULARISATION

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PRESENTATION OF CASES

Left ventricular thrombus is a common complication of acute myocardial infarction, especially of the anterior and apical walls, appearing in 33 to 68% of autopsies or 20 to 40% of two-dimensional echocardiographic studies.¹⁻⁴ Left ventricular (LV) thrombus is a life-threatening complication of severe left ventricular dysfunction. The following cases illustrate our experience in treating patients with acute left ventricular thrombi.

Case 1

A 64-year-old man, known case of diabetes mellitus and hypertension presented with angina since 20 days and was diagnosed to have anterior wall MI, moderate LV dysfunction, EF of 35% with akinetic anterolateral and inferior segments and also had a large clot at LV apex which was mobile, pedunculated measuring 3.6 x 2.1 cm.

Coronary angiogram showed TVD, requiring surgery only. He was started on antiplatelets and heparin. He was haemodynamically stable with pain relieved by medication. Serial echocardiograms showed regression in the size of the clot and hence trial of anti-coagulation with injection Heparin 5000 IU given intravenously q.i.d. was continued.

Repeat echo showed complete dissolution of clot after 15 days. He was then taken up for CABG done using off pump technique with grafts to LAD and RCA. Intraoperative TEE showed no e/o clot. Postoperatively, he recovered smoothly without any embolic events. Discharged after 7 days with acitrom and antiplatelets. On follow-up echo after 3 months, patient was symptom free with good LV function and no e/o clot.

During a 6-month period, 3 patients with a mobile, pedunculated left ventricular thrombus were encountered in our unit. All 3 patients had a recent history of myocardial infarction. The thrombus was removed during the acute phase of myocardial infarction in 1 patient and concomitant coronary artery bypass grafting was performed. The other two patients were stable, hence put on a trial anticoagulation and after dissolution of the clot were operated with off pump technique. There were no deaths and none of the patients had clinical or echocardiographic evidence of recurrent thrombi or emboli at follow-up 3 months later. These results indicate that in stable patients, a trial of anticoagulation can be done successfully.

Case 2

A 54-year-old man, known diabetic, hypertensive, old AWMIs/p PTCA to LAD, presented with chest pain on exertion and was diagnosed to have IWMIs with large mobile, pedunculated LV apical clot 3.4 x 1.9 cm with akinetic anteroapical and apical segments.

Coronary angiogram showed DVD with in-stent stenosis. He was started on Inj. Heparin 5000 IU IV q.i.d. Patient continued to have ongoing chest pain; hence, he was taken for emergency coronary revascularisation. CABG was done with grafts to LAD and RCA and clot was completely evacuated during the same procedure. Intraoperative TEE was done to confirm clot evacuation.

Post-operatively, he improved well without any embolic events and was discharged in stable condition. He was prescribed Acitrom to maintain INR of 1.5 to 2. On follow-up echo after 3 months, patient was symptom free with good LV function and no e/o clot.

Case 3

A 56-year-old male, known diabetic and hypertensive presented with atypical chest pain since 15 days diagnosed to have NSTEMI, unstable angina with LV segmental hypokinesia of anterolateral, basal infero-posterior segments and had a mobile, pedunculated LV clot 3.3 x 1.9 cm situated at the inferior wall. It was found to be closely adherent to the papillary muscle bundles. Coronary angiogram revealed LMCA and TVD, started on antiplatelets and anticoagulation with Inj. Heparin.

Serial 2D echocardiogram showed regression in size of LV clot and TEE during surgery showed no e/o clot. He

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underwent off pump coronary revascularisation with grafts to LAD and PDA.

Post-operatively, he improved well without any embolic events and follow-up echo after 3 months showed no e/o clot.

DIFFERENTIAL DIAGNOSIS

Similar presentation might have been seen in intracardiac tumours, the commonest of which would have been a myxoma.

PATHOLOGICAL DISCUSSION

Histopathological examination of the specimen obtained from the first cases revealed it to be a thrombus, confirming our clinical diagnosis.

Figure 1. Echocardiography showing Mobile Pedunculated Clot at LV apex

DISCUSSION ON MANAGEMENT

The possible treatment options include anticoagulation, thrombolysis and surgical thrombectomy.¹⁻² Small immobile thrombi can be safely managed with anticoagulation; however, treatment for large mobile thrombi is often problematic. LV thrombus is usually associated with poor LV function.³ Therefore, surgical approaches such as left ventriculotomy, which potentially cause further deterioration of LV function should be avoided if possible.⁵

Mobile, pedunculated thrombi are rare in comparison to mural thrombi, but carry a significantly higher risk of embolisation.⁶⁻⁹ Although, under anticoagulant treatment some of the left ventricular thrombi may resolve⁴ and the rate of systemic emboli may be reduced significantly.² Recurrent embolisation under anticoagulant treatment has been reported.^{6,7} Moreover, the outcome of patients with recurrent emboli due to mobile, pedunculated thrombi who were not operated on was generally very poor^{6,7} as compared with the limited experience with those who underwent an operation.

Left ventricular thrombus is a common complication following myocardial infarction with or without left ventricular aneurysm or cardiomyopathy. On autopsy studies, left ventricular thrombus was found in 33 to 68% of patients following myocardial infarction.^{1,2} A rare type of left ventricular thrombus is a pedunculated thrombus, that is connected to the ventricular wall or septum by a narrow stalk and that moves throughout the cardiac cycle. Such thrombi have an especially high tendency of embolisation despite

adequate anticoagulant treatment. However, operating on this sub-group of patients with friable myocardium, systemic complications and doing a ventriculotomy for clot evacuation is especially hazardous. It can result in increased bleeding, arrhythmias and poor outcome.

Based on our results, despite a limited group of patients and on the few reported cases in the literature,^{7,9} we believe that a trial of anticoagulation can be done in stable patients while serially monitoring them using echocardiography.^{10,11} We also believe that the routine and repeated use of two dimensional echocardiography¹² in patients after acute myocardial infarction will detect the pedunculated thrombi. Any reduction in size of clot should result in continuation of this trial, as the ability to avoid thrombectomy in such sick patients can obviously result in better outcomes as was seen in our patient group.^{5,10,11} Additionally, the surgery can be done using off pump technique as was done in our group, which can avoid pump related complications in these sick patients.

Hence, we believe that in patients with LV clot post-acute myocardial infarction with stable haemodynamics, needing surgical revascularisation, a trial of conservative management with anticoagulation can be done. In case of ongoing symptoms or failure of size reduction, patient can be taken for early revascularisation with clot evacuation.

FINAL DIAGNOSIS

LV clot, post-acute myocardial infarction.

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