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A case of conservative management of post myocardial infarction ventricular free wall rupture

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Abstract

Left ventricular free wall rupture (LVFWR) is a rare (2 -4%) but fatal complications accounting for 5-24% of all in-hospital deaths related to acute myocardial infarction (AMI). Most of LVFWR requires stabilization with mechanical left ventricular support, intra-aortic balloon pump (IABP), followed by urgent surgical intervention to repair the defect. Transcatheter interventions have been attempted with limited success. We present a case report of a patient who presented with cardiogenic shock due to LVFWR related to acute STEMI that was successfully treated conservatively with IABP and emergent pericardiocentesis.

Keywords

myocardial infarction; free wall rupture; conservative; hemodynamically unstable

Case Report

A 58-year-old Asian male presented to the emergency department with mild intermittent midsternal chest pain with no radiation, Shortness of breath and nausea for about a week. He denies significant past medical history. He denies tobacco smoking or the use of illicit drugs such as cocaine. On examination, he was diaphoretic, pale and hypotensive with a blood pressure of 80/50, tachycardic to 140 and desaturating to 80% on ambient air. He had markedly distended neck veins, clear breath sounds, muffled heart sounds, and no peripheral edema. 12 -lead electrocardiogram showed ST elevation on inferolateral leads suggesting acute MI, Troponin-I was elevated to 21 and chest x-ray showed cardiomegaly with prominent central pulmonary vasculature without overt pulmonary edema.

He was rushed to cardiac catheterization which showed 50% occlusion of left anterior descending (LAD) coronary artery disease and total occlusion of mid and distal circumflex coronary artery. In addition to this, there was equalization of right heart pressures which is consistent with cardiogenic shock due to cardiac tamponade. Left ventriculogram showed Ejection Fraction of 25 % with inferolateral wall hypokinesis and spillage of contrast fluid through the free wall into pericardial space suggesting left ventricular

free wall rupture (Figure 1). Stat Transthoracic Echocardiogram (TTE) showed an LV ejection fraction of 30 – 35% with massive pericardial effusion more than 2cm in the anterior pericardial space suggestive of hematoma (Figure 2). Due to his deteriorating hemodynamic status, he was started on a Norepinephrine drip along with the placement of an intra-aortic balloon pump (IABP). He had plain balloon angioplasty that partially improved Thrombolysis in Myocardial Infarction (TIMI) flow from 0 to 1 due to his hemodynamic instability.

Due to his worsening hemodynamic instability, pericardiocentesis was done with the removal of 250 ml of non-clotted blood. His BP and MAP started to improve, his saturation returned to normal and he was transferred to the recovery room on stable condition but with IABP with 1:1 counter- pulsation. On the next day, repeat Echocardiogram showed small pericardial effusion for which the patient was transferred to a tertiary care center for possible open surgical repair. At the tertiary care center, he had repeat Echocardiogram and CT of the chest that showed minimal pericardial effusion with no signs of pericardial tamponade. The patient was stable and he was discharged home without further interventions on aspirin and plavix. Three months follow up echocardiography showed improvement of his ejection fraction to 40 – 45%. At his three and six months follow up visits, the patient continued to have excellent functional status and no need for any additional catheter-based or surgical intervention.

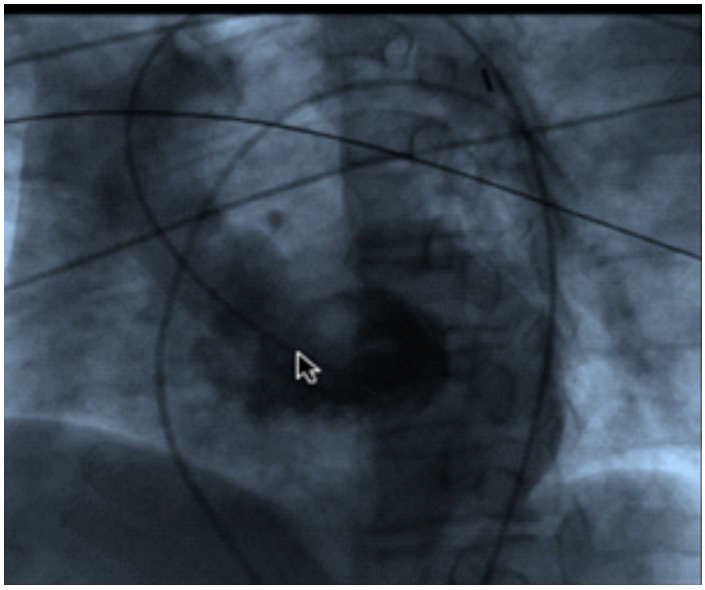

Figure 1: Left ventriculogram showed Ejection Fraction of 25% with inferolateral wall hypokinesis and spillage of contrast fluid through the free wall into pericardial space suggesting left ventricular free wall rupture.

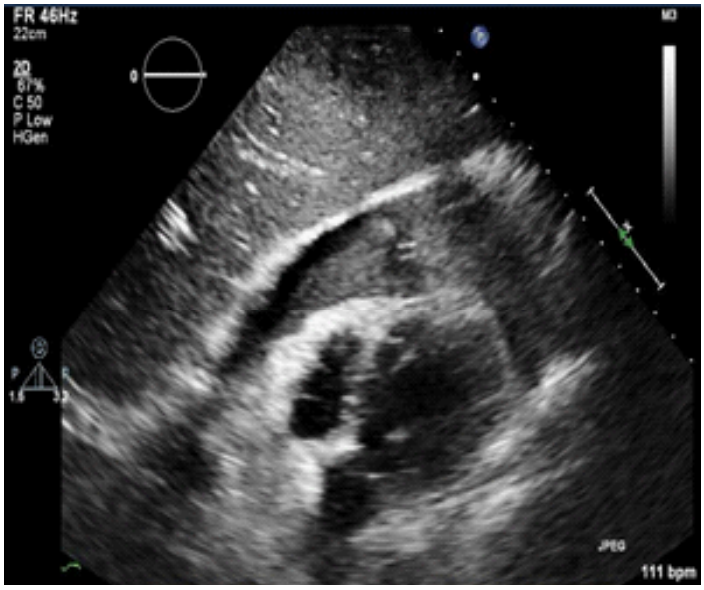

Figure 2: Transthoracic Echocardiogram showing a significant amount of pericardial effusion > 2 cm.

Discussion

Ventricular wall rupture remains the most fatal complication of acute myocardial infarction accounting for 20% of all MI related deaths. Commonly, ventricular wall rupture follows the first attack of MI in 80 - 90% of cases and is related to the multivessel disease [3-7]. It commonly presents acutely with cardiac arrest due to cardiac tamponade causing electromechanically dissociation and hypotension or as subacute oozing with varying degrees of hypotension and pericardial effusion and associated distended jugular veins and facial congestion [1-3,6,8].

Surgical repair of the rupture remains the definitive treatment of free ventricular wall rupture. However, it carries a high mortality. Even though there are little data about operative mortality. It has been reported that immediate mortality is as high as 24% to 35% and hospital mortality is as high as 35% [7]. In addition to a classic surgical technique that involves infarctectomy and application of prosthetic patch under cardio-pulmonary bypass. There are alternative interventions such as the use of biologically glued pericardial patches, pledgeted sutures, and Dacron prosthesis to repair cardiac rupture based on the skill of the surgeon, urgency and hemodynamic stability of patients [3,6-8]. For those patients who are coming to non-tertiary centers where there is no cardio-pulmonary bypass, the use of less invasive approaches such as Trans-catheter closure devices might be entertained [9,10].

Our case was managed conservatively with no surgical intervention, given the hemodynamic instability of the patient and the patient was discharged home successfully.

Conclusions

Based on our patient presentation, we would like to suggest a high level of suspicion for patients presenting with cardiogenic shock with nonspecific symptoms of acute myocardial infarction to the patient life. Though definitive management option for free wall rupture remains surgical, our case provides additional evidence that conservative treatment with pericardiocentesis and tube drainage should be considered for those who are hemodynamically unstable.

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