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Left ventricle free wall rupture, after myocardial infarction: A case report

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Abstract

Left ventricular free wall rupture (LVFWR) is a rare complication of acute myocardial infarction (AMI), occurring in approximately 2% of cases. We encountered a case of post PCI left ventricle free wall rupture for STEMI, the diagnosis was made by echocardiography and chest CT, which was almost missed despite an echo study and frequent visits for persistent chest pain.

Key words: LV rupture, LV pseudoaneurysm, chest pain, myocardial infarction, left ventricle

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Page: 523-526

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Introduction

Left ventricular free wall rupture (LVFWR) is a rare complication of acute myocardial infarction (AMI), occurring in approximately 2% of cases.[1] Cardiac rupture in the acute phase of AMI generally occurs within the first week after its onset and carries a 90% possibility of free wall rupture, which is associated with a high mortality rate. [2] Free wall rupture is under-recognized. Sometimes it can be subacute and may not be typical of an acute blowout rupture leading to death in few minutes. [3],[4],[5] The clinical presentation varies from a catastrophic blowout type characterized by cardiogenic shock and eventually cardiac arrest, to the oozing type with hemodynamic instability and pericardial effusion.[6]

Description

A 60 year old male, smoker, hypertensive and diabetic referred to the cardiology department of Ibn Al-Baitar cardiac center, Baghdad, Iraq for non-resolving chest pain ten days after PCI. The history of the patient started in February where he had an attack of chest pain and transferred to ER where he was diagnosed with STEMI, and had an emergency PCI and found to have 3 vessel disease and had stenting of stenotic vessels, five months later patient developed another attack of chest pain and a new PCI was done and found to have LCX ISR (total occlusion), and crossed and redilated with overlap inflations, patient was put on antiplatelet therapy and discharged home, after ten days the patient was still complaining from chest pain and was prescribed with simple analgesia, echocardiography was done for him and only found to have IHD, no mention of the LVFWR, patient was still suffering from chest pain after one month, so he was referred to our cardiology department for further management , full work up was done for him including an ECHO, that showed a missed posterior LV free wall rupture. Cardiac MRI also gave a possibility of the condition (Figure 1), CT chest was taken that revealed bilateral (more on the left) mild pleural effusion, and patient was diagnosed with posterior LVFWR, and prepared for emergency intervention.

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Figure 1: Cardiac MRI

Midline sternotomy for pericardiotomy,heparinization and cannulation and CPB initiated, release of adhesions was done and clot removed, posterior LVFWR was confirmed and carefully dissected (Figure 2), the LVFWR was adhering to the pleura and diaphragm which is how the rupture was contained and the heart was protected from a "blow out'' rupture and death.

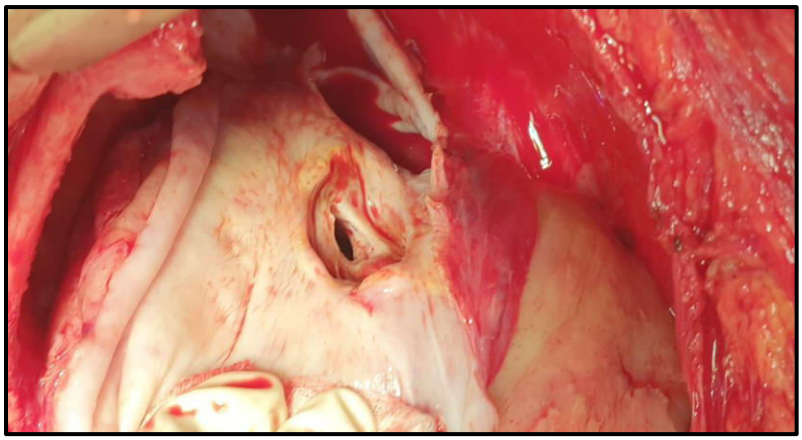

Figure 2: LVFWR

The heart was arrested with antegrade and retrograde cardioplegia and linear closure of the defect by PETFE felt strips using prolene 4\0 and reinforcement by overlapping with the sac of aneurysm.SVG to RC was interposed.TotalXC time was 83 min. The geometry of the LV was restored and and aspiration of both pleurae was done, during rewarming and initiation of weaning from bypass patient was noticed to have bleeding with no obvious site of bleeding discovered, so aggressive hemostasis was done with starting protamine and giving blood components, patient then was weaned from bypass.

Patient was transferred to the ICU and post-operative management begun. The patient developed oliguria, fluid replacement and diuretics were given but renal indices kept on rising, nephrology consultation was sent for and the recommendation was to keep on medical therapy and postpone a renal replacement therapy, on POD#2 urine output was restored and renal indices were coming down and became normal on POD#6 along with post op workup and patient was discharged home, patient was seen on regular outpatient visits and all workup was normal including renal function tests.

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Discussion

LVFWR is a rare but devastating complication of AMI [7], diagnosis depends on a high index of suspicion as well as close monitoring of patient's symptoms and signs. [8],[9],[10] LVFWR is a rare, unpredictable and often fatal post-AMI complication. Despite demonstrated improved clinical outcomes, post-AMI LVFWR with an incidence of 0.2–7.6% [11], still accounts for 24–61% of in-hospital disease-related mortality.[11],[12] The treatment approach involves a closure of the defect with preservation of LV geometry, Different techniques have been developed over the years for the management of LVFWR. Nevertheless, the optimal surgical treatment for this post-AMI mechanical complication remains controversial. Although the technical strategy varies, a basic principle that appears to remain unchanged is that surgeons should put the stitches, or fixed patches, in the healthy myocardial tissue. [11]

Conclusion

LVFWR is a rare but lethal complication of myocardial infarction, diagnosis needs a high index ofsuspicion and thorough investigation and surgery is the best choice of treatment.

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Author contribution

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Declaration of competing interest

None to be declared.

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