Case report

Free wall rupture : the fatal complication not to forget .

Abstract

Background:

Left ventricular free wall rupture is among the Mechanical complications following acute myocardial infarction ,The incidence of LVFWR has decreased dramatically over the years with the increased use of reperfusion strategies.

CASE PRESENTATION :

We report a case of a 65-year-old man with multiple cardiovascular risk factors, complaining of typical chest pain for 6 days before his admission. patient was conscious and physical examination showed heart rate 129 beats/min,blood pressure 110/70 mm Hg, and severe pulmunary congestion,His electrocardiogram showed atrial fibrillation,with the presence of Q wave in inferior and lateral territory. A transthoracic echocardiogram showed a 18mm pericardial effusion with middly reduced EF45% ,and that myocardium was transmurally detached in diameter of 0.6 cm in the antero-lateral region,02h after admission, his condition worsened with severe dyspnea, , and hypotension ,the patient subsequently lost pulses and underwent CPR for 20 min. the patient was intubated and ressusitaded , he was immediately taken to the OR for exploration and drainage ,In the OR the patient presented another cardic arrest . After another hour of attempted resuscitation the patient died on the table.

CONCLUSION :

Left ventricular free wall rupture is rarely described in the literature,
imaging by echo or computed tomography (CT) is essential for detecting this dangerous condition.

Keywords :

STEMI, , Pericardial effusion, MI complications

INTRODUCTION :

Left ventricular free wall rupture (LVFWR) is among the Mechanical complications following acute myocardial infarction (AMI) that may involve the interventricular septum, the ventricular free wall or the papillary muscles.

Comment [1]: An important, potentially fatal complication to keep in mind

Comment [2]: « Left ventricular free wall rupture (LVFWR) is one of the mechanical complications of acute myocardial infarction. »

Comment [3]: « The patient was conscious... »

Comment [4]: « showed a heart rate of 129 beats per minute, a blood pressure of 110/70 mmHg.... »

Comment [5]: « The electrocardiogram showed... »

Comment [6]: « the presence of Q waves in inferior and lateral leads »

Comment [7]: « showed an 18 mm... »

Comment [8]: « With a mildly reduced ejection fraction (EF) of 45% and a transmural detachment of the myocardium 0.6cm in diameter in the anterolateral region. »

Comment [9]: « Twenty hours following admission, the patient's condition worsened, with an onset of severe dyspnea and hypotension. The patient subsequently became pulseless and underwent cardiopulmonary resuscitation (CPR) for 20 minutes. The patient was intubated and successfully resuscitated, and was immediately taken to the operating room (OR) for surgical exploration and drainage. In the OR, the patient went into cardiac arrest and died following an hour of attempted resuscitation . »

Comment [10]: The MEDLINE database has over 4000 entries for the search term « left ventricular free wall rupture », therefore this statement is untrue. Please rephrase your conclusion.

Comment [11]: « is one of the mechanical complications following .... »

LVFWR is most likely to occur 1–4 days after the initial myocardial insult, and is one of the more deadly complications of MI [1].

The incidence of LVFWR has decreased dramatically over the years with the increased use of reperfusion strategies such as percutaneous coronary intervention (PCI) and fibrinolytic therapy, with an overall incidence ranging from 0.8% to 6.2% [1] .

However, it is still encountered in less than 2% of cases with ST-elevated acute myocardial infarction even after urgent reperfusion therapy, and remains associated with high mortality rates.

The early diagnosis of LVFWR is critical and point of care ultrasound (POCUS) can help establish the diagnosis quickly by revealing evidence of pericardial effusion and tamponade.

Learning Objective:

we report on the rare complication occurrence of free wall rupture following a late , non revascularized myocardial infarction , a diagnosis to look for in the presence of concomittent pericardial effusion even when the patient is stable initially . we emphasis the role of systematic echocardiography to make the diagnosis.

CASE PRESENTATION :

65-year-old man was a smoker and hypertensive with no history of coronary artery disease, The man presented in the emergency room with complaints of chest pain for 6 days before his admission. The patient was conscious and physical examination showed heart rate 129 beats/min, blood pressure 110/70 mm Hg, temperature 36.5℃. cardiopulmunary auscultation revealed pulmunary congestion.

Initial electrocardiogram (ECG) showed atrial fibrillation and pathological Q waves in inferior and lateral territory[figure 1].

urgent echocardiography revealed a 18mm cm pericardial effusion, with middly reduced EF45% and hypokinesis of infero lateral and antero lateralwall.

the patient recieved diuretic thearpy and dapt ;18h after admission, his condition worsened with severe dyspnea, sweating, and hypotension.

A second Echocardiographic examination performed revealed aggravation of effusion and that myocardium was transmurally detached in diameter of 0.6 cm in the apico-lateral region related to a lv free wall rupture [figure2].

the patient subsequently lost pulses and underwent cardiopulmonary resuscitation (CPR) for 20 min. the patient was intubated and ressusitaded ;he was too hemodynamically unstable to be taken to the catheterization lab for PCI.

In an effort to prevent further cardiac arrests, he was immediately taken to the operation room (OR) for further exploration .

Comment [12]: « following »

Comment [13]: This part is reduntand and can be removed in whole from the manuscript.

Comment [14]: « A 65-year-old male presented to the emergency department with a chief complaint of chest pain lasting for 6 days before admission. He was a smoker with a history of arterial hypertension and no history of coronary artery disease. The patient was conscious on presentation and the physical examination showed a heart rate of 129 beats per minute, a blood pressure of 110/70mmHg, a temperature of 36.5C. Cardipulmonary auscultation findings were suggestive of pulmonary congestion. »

Comment [15]: « The initial electrocardiogram »

Comment [16]: « leads »

Comment [17]: « Urgent »

Comment [18]: « revealed an 18mm pericardial effusion, with a mildly reduced ejection fraction (EF) – 45% and hypokinesis of the inferolateral and anterolateral walls »

Comment [19]: « The patient received diuretic therapy and dual anti platelet therapy (DAPT). 18 hours following admission, his condition worsened with an onset of severe dyspnea, sweating and hypotension. »

Comment [20]: « echocardiographic »

Comment [21]: « and a transmural detachment of the myocardium 0.6cm in diameter in the apicolateral region, indicative of a left ventricular free wall rupture »

Comment [22]: « The patient subsequently became pulseless and underwent cardiopulmonary resuscitation (CPR) for 20 minutes. The patient was intubated and successfully resuscitated. However, he was deemed too hemodinamically unstable to be taken to the catheterization lab for PCI. »

In the OR the patient presented another cardia arret , After about another hour of attempted resuscitation his systolic pressure was no longer able to be generated and the patient eventually expired on the table.

Comment [23]: « the patient went into another cardiac arrest »

Comment [24]: « Following an hour of attempted resuscitation, the patient expired on the operating table. »

DISCUSSION :

An MI complicated by LVFWR carries a high mortality rate estimated to 88.2% . Over half the deaths of LVFWR occur as out-of-the-hospital sudden death . [2]

The risk factors of LVFWR are: anterior infarct, large transmural infarct, age > 70 years, female sex, no angina or MI history , late PCI . [3].[4]

Ruptures are divided into 3 types: acute rupture, resulting in death within few minutes due to massive hemorrhage ; subacute rupture, characterized by a smaller tear that may temporarily be sealed by a clot or pericardial adhesion, compatible with life for several days; chronic rupture with false aneurysm formation.[5]

Echocardiographic findings in the case of LVFWR are a localized pericardial effusion overlying the infarcted akinetic area. Other signs includes echogenic 'specks' within the effusion and visible wall defects.

Comment [25]: « include »

Consent :

informed written consent has been obtained

References:

[1].George H. Nasr, Diana Glovaci, Andrew Mikhail, et al , Left ventricular free wall rupture as a result of delayed presentation of an inferior ST-elevation myocardial infarction due to fear of COVID-19 , 2021 Apr 22 doi: 10.1186/s13019-021-01495-x

[2].Figueras J, Cortadellas J, Soler-Soler J. Left ventricular free wall rupture: clinical presentation and management. Heart. mai 2000;83(5):499-504.

[3].Han CSY, Bohonis S, Walker JR, Vo M, Hussain F, Pascoe E, et al. An unusual presentation of left ventricular free wall rupture. Canadian Journal of Cardiology. 1 oct 2010;26(8):e328-9.

[4]. Okabe T, Julien HM, Kaliyadan AG, Siu H, Marhefka GD. Prompt Recognition of Left Ventricular Free-Wall Rupture Aided by the Use of Contrast Echocardiography. Texas Heart Institute Journal. 1 oct 2015;42(5):474-8.

[5]. Mishra PK, Pathi V, Murday A. Post myocardial infarction left ventricular free wall rupture. Interactive CardioVascular and Thoracic Surgery. 27 oct 2006;6(1):39-42.

Figure Legends:

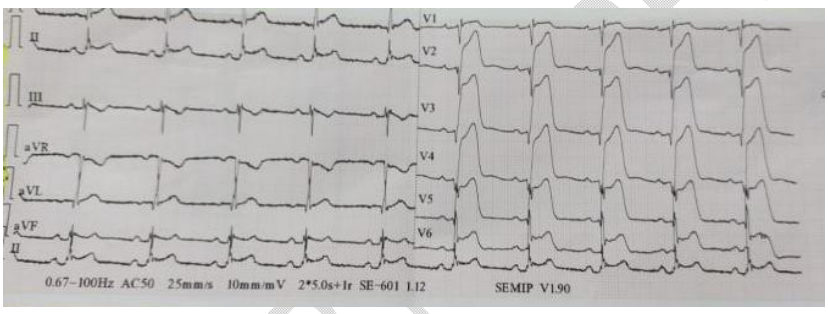

FIGURE1 : atrial fibrillation and pathological Q waves in inferior and lateral territory with ST elevation)

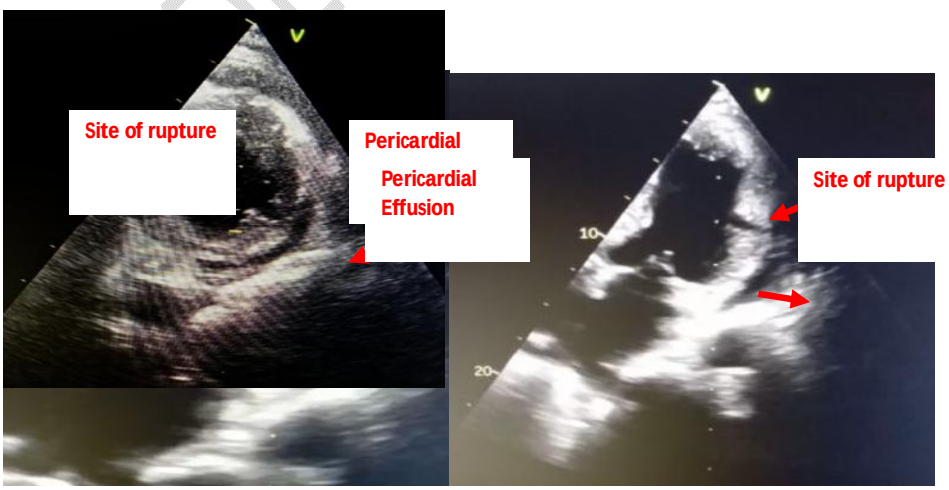

Figure 2 : transthoracic echocardiography : myocardial defect * in the anterolateral wall , with a serpigionous pattern , associated with pericardial effusion