Unruptured Left Ventricular Pseudoaneurysm After Silent Myocardial Infarction with Mitral Valve Regurgitation

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Abstract

Acquired left ventricular pseudoaneurysm is a rare disorder that occurs after acute myocardial infarction. We present a 55 year-old male patient with a nonruptured pseudoaneurysm after acute MI presenting with severe mitral regurgitation. After resection of sac-like lesion, the defect was 5 cm diameter posterolaterally left ventricular. The aneurysm was repaired with pericardium patch to maintain cardiac geometry that diminishes mitral regurgitation without intervention to mitral valve.

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Running Head: LVPSA case with unusual correcting mitral failure

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Abstract

Acquired left ventricular pseudoaneurysm is a rare disorder that occurs after acute myocardial infarction. We present a 55 year-old male patient with a nonruptured pseudoaneurysm after acute MI presenting with severe mitral regurgitation. After resection of sac-like lesion, the defect was 5 cm diameter posterolaterally left ventricular. The aneurysm was repaired with pericardium patch to maintain cardiac geometry that diminishes mitral regurgitation without intervention to mitral valve.

IntroductionLeft ventricular pseudoaneurysm is a rare complication of acute myocardial infarction that can result with catastrophic conditions. We present a 55 year-old male patient with a nonruptured pseudoaneurysm after acute MI presenting with severe mitral regurgitation due to the localisation of defect.

Surgical resection of the sac and repair of the ventricle was performed with bovine pericardium, also left internal mammary artery (ITA) to left anterior descending (LAD) artery bypass performed.

This article is based on previously conducted studies and does not contain any studies with human participants or animals performed by any of the authors. Informed consent has been taken by the patient and the study has been approved by the ethics committee of our hospital. **Case Report**A 55 year-old male patient presented to our clinic with dyspnea and palpitation that get worse for couple of weeks. He has a history of hypertension, diabetes mellitus and chronic obstructive pulmonary disease. His blood pressure was 110/70 mm Hg, pulse rate 90 with sinus ryhtm. Transthoracic echocardiography showed 40-45% of ejection fraction, mild pericardial effusion, severe mitral regurgitation and the impairment on left ventricular segmental wall motion with a dyskinetic cavity posterolaterally. Color doppler showed passage of blood from left ventricular cavity to pericardium with and narrow opening. CT- Angiography revealed a 5 x 5.5 cm sized focal sac like lesion next to posterolateral left ventricular wall with 2 cm neck. [*Figure 1*] Patient underwent coronary angiography, that showed 80 % lesion on proximal LAD, total occlusion on circumflex artery and 70% lesion on right coronary artery (RCA).

At surgery, a large nonruptured posterolateral pseudoaneurysm was seen. After resection of the sac, the defect was between two papillary muscle on posterior left ventricle was closed with bovine pericardium patch strengthened with teflon-felt pledgets [*Figure 2*]. Concomitant Left ITA to LAD bypass were performed. Circumflex artery was not bypass-able and RCA could not be visualisized due to adhesions. Intraaortic balloon pump was placed perioperatively. Control transesophageal echocardiography showed no outflow from the defect and mild mitral regurgitation was detected without need of mitral valve intervention and the operation was completed.

Postoperatively, the patient was taken to the intensive care unit, was extubated on the 2nd day of his follow-up, hemodynamically stable. Safely separated from intraaortic balloon pump after the control transtorasic echocardiography reported as %35-40 of ejection fraction, mild mitral insufficiency and postero-septal hipokinesia. Unfourtunately he was re-intubated 5thday due to respiratory disstress. Examinations showed up he has Covid-19 infection. Due to respiratory failure the patient deceased 8th day post-operation. **Discussion**Left ventricular rupture is a rare mechanical complication that seen after acute my-ocardial infarction. Free wall rupture causes sudden death. Rarely the rupture of the ventricle is limited with adherent fibrous pericardial tissue that results as pseudoaneurysm formation.

Pseudoaneurysms are characterized by a neck narrower than the diameter of the sac which contains organized trombus and blood with no myocardium. This is in contrast to true aneurysm, which have wider neck and progresses from endocardium to pericardium respectively [1]. Acute transmural MI is the most common cause of LV pseudoaneurysm (%55); followed by cardiac surgery (%33), trauma (%7) and infection (%5)[2]. About half of the pseudoaneurysms were posterior or inferior localisation. [3] Pseudoaneurysm have an approximately 30-40% risk of rupture and also embolism, arhytmia that can result catastrophic conditions.Two-dimensional transthoracic echocardiography and left ventriculography are the best available test for the diagnosis. Coronary angiography findings may help distinguish the source of ischemia. Also CT-Angiography and cardiac MRI provide detailed images of the pseudoaneurysm and delineates its relation to other cardiac structures. [4] Early surgical intervention with patch closure is recommended once the pseudoaneurysm is detected because of the high risk of rupture.

Mitral failure associated with pseudoaneurysm is caused by mainly three factors: mitral ring dilatation, restriction of posterior mital leaflet due to ventricular dilatation, loss of contraction of ventricular wall. [7] Repair of pseudoaneurysm as in this case, may support to restoration of ventricular geometry and reestablishing mitral valvar function. **Conclusions**Left ventricular wall rupture is a mortal complication occuring 4% of patients after acute MI [5]. Rarely pseudoaneurysm information can be seen with adherent pericardial tissue. Pseudoaneurysms can be symptomatic or may also have silent progress, require suspicious examination. Once it diagnosed, it should be corrected urgently because of the high risk of complication such as heart failure, embolism or sudden death. During procedure maintaining cardiac geometry is crucial for proper cardiac physiology. [6] And this case have shown that the mitral insufficiency which was thought to be related to the LV pseudoaneurysm can be corrected with repair of the pseudoaneurysm and may not require mitral intervention.

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