

Unruptured left ventricular pseudoaneurysm after silent myocardial infarction with severe mitral valve regurgitation

Sessiz miyokard enfarktüsü sonrası ileri mitral yetmezliğin de eşlik ettiği rüptüre olmamış sol ventrikül psödoanevrizma olgusu

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ABSTRACT

Acquired left ventricular pseudoaneurysm is a rare disorder that occurs after acute myocardial infarction. Herein, we present a 55-year-old male patient with a unruptured pseudoaneurysm after acute myocardial infarction presenting with severe mitral regurgitation. After resection of the pseudoaneurysm sac, the defect of 5 cm located at the posterolateral aspect of the left ventricle was repaired with a pericardium patch, and it was determined that mitral regurgitation diminished after cardiac geometry was restored and intervention to the mitral valve not required.

Keywords: Cardiac geometry, left ventricular pseudoaneurysm, mitral failure, myocardial ischemia.

ÖZ

Kazanılmış sol ventrikül psödoanevrizması akut miyokard enfarktüsü sonrası görülen nadir bir komplikasyondur. Bu makalede akut miyokard enfarktüsü sonrası ileri mitral yetersizliğin eşlik ettiği rüptüre olmamış sol ventrikül psödoanevrizması saptanan 55 yaşında erkek hasta sunuldu. Psödoanevrizma kesesinin rezeksiyonu sonrası sol ventrikül posterolateralinde saptanan 5 cm boyutundaki defekt, perikard yama ile kapatıldı, kardiyak geometri yeniden sağlandıktan sonra mitral yetmezliğin gerilediği ve mitral kapağa girişim ihtiyacı kalmadığı saptandı.

Anahtar sözcükler: Kardiyak geometri, sol ventrikül psödoanevrizması, mitral yetmezlik, miyokard iskemisi.

Left ventricular pseudoaneurysm is a rare complication of acute myocardial infarction that can result in catastrophic conditions. This article is based on previously conducted studies and does not discuss any studies with human participants or animals performed by any of the authors. In this report, we present a case of unruptured pseudoaneurysm after acute myocardial infarction presenting with severe mitral regurgitation due to the localization of the defect.

CASE REPORT

A 55-year-old male patient presented to our clinic with dyspnea and palpitation that had progressively

worsened over the past couple of weeks. The patient had a history of hypertension, diabetes mellitus, and chronic obstructive pulmonary disease. The patient's blood pressure was 110/70 mmHg and pulse was 90/min with sinus rhythm. Transthoracic echocardiography revealed an ejection fraction of 40 to 45%, mild pericardial effusion, severe mitral regurgitation, and impairment in the left ventricular segmental wall motion with a posterolateral dyskinetic cavity. Color Doppler showed the passage of blood from the left ventricular cavity to the pericardium with a narrow opening. Computed tomography angiography revealed a 5×5.5 cm sized focal sac-like lesion next to the posterolateral left ventricular wall

Received: January 24, 2022 Accepted: March 26, 2022 Published online: June 06, 2022

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Citation:

Kehlibar T, Kızılyel F, Yılmaz M, Ketenci B. Unruptured left ventricular pseudoaneurysm after silent myocardial infarction with severe mitral valve regurgitation. *Cardiovasc Perf Nurs* 2022;1(2):41-43.

with a 2 cm neck (Figure 1). The patient underwent coronary angiography, which showed an 80% lesion on the proximal left anterior descending artery, total occlusion of the circumflex artery, and a 70% lesion on the right coronary artery.

A large unruptured posterolateral pseudoaneurysm was observed during surgery. After the resection of the sac, the defect located between the two papillary muscles on the posterior of the left ventricle was closed with a bovine pericardium patch and strengthened with Teflon felt pledgets (Figure 2). Concomitant left internal mammary artery to left anterior descending artery bypass was performed. The circumflex artery was not bypassable, and the right coronary artery could not be visualized due to adhesions. An intra-aortic balloon pump was placed perioperatively. The control transesophageal echocardiography showed no outflow from the defect, and mild mitral regurgitation was detected without the need for mitral valve intervention, concluding the operation.

Following the operation, the patient was taken to the intensive care unit and extubated on the second day of follow-up as he was hemodynamically stable. The patient was safely separated from the intra-aortic balloon pump after the control transthoracic echocardiography demonstrated an ejection fraction of 35 to 40%, mild mitral insufficiency, and posteroseptal hypokinesia. The patient was reintubated on the fifth day due to respiratory distress. Examinations revealed a coronavirus disease 2019 infection. The patient deceased on the eighth postoperative day due to respiratory failure.

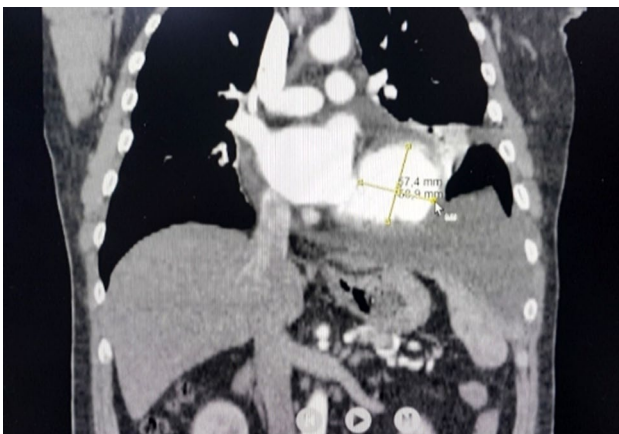


Figure 1. Computed tomography angiography image of the sac-like lesion on the posterolateral left ventricular wall.

DISCUSSION

Left ventricular rupture is a rare mechanical complication encountered after acute myocardial infarction, and a free-wall rupture may cause sudden death.^[1] The rupture of the ventricle is rarely limited to the adherent fibrous pericardial tissue, which results in pseudoaneurysm formation.^[2]

Pseudoaneurysms are characterized by a neck narrower than the diameter of the sac, which contains organized thrombus and blood with no myocardium.^[3] This is in contrast to a true aneurysm, which presents with a wider neck and progresses from the endocardium to the pericardium.^[4] Acute transmural myocardial infarctions are the most common cause of left ventricular pseudoaneurysm (55%), followed by cardiac surgery (33%), trauma (7%), and infection (5%).^[5] About half of the pseudoaneurysms are posterior or inferior localization.^[6] Pseudoaneurysms have a rupture risk of approximately 30 to 40%, and may also cause embolisms and arrhythmia.^[7] Two-dimensional transthoracic echocardiography and left ventriculography are the best available options for the diagnosis.^[8] Coronary angiography findings may help

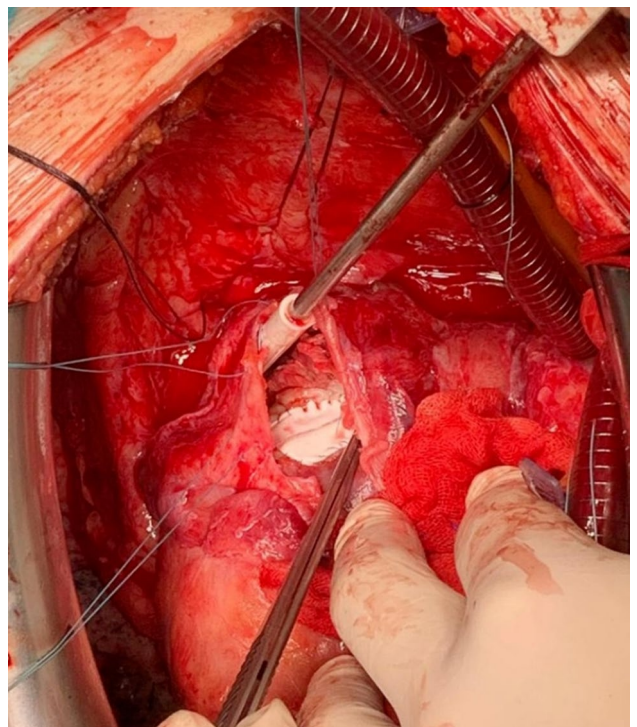


Figure 2. An image of the left ventricular free-wall defect closed with a pericardial patch.

distinguish the source of ischemia.^[9] Additionally, computed tomography angiography and cardiac magnetic resonance imaging provide detailed images of the pseudoaneurysm and delineate its relation to other cardiac structures.^[10] Early surgical intervention with patch closure is recommended once the pseudoaneurysm is detected due to the high risk of rupture.

Mitral failure associated with pseudoaneurysm is mainly caused by three factors: mitral ring dilatation, restriction of the posterior mitral leaflet due to ventricular dilatation, and loss of contraction of the ventricular wall.^[11,12] Repair of the pseudoaneurysm, as in this case, may support the restoration of ventricular geometry and reestablish mitral valve function.

In conclusion, the mitral insufficiency, which was thought to be related to left ventricular pseudoaneurysm, can be corrected with the repair of the pseudoaneurysm and may not require mitral intervention.

Patient Consent for Publication: A written informed consent was obtained from the patient.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Author Contributions: Idea/concept, control/supervision, critical review: B.K.; design, writing the article, references and fundings: T.K.; data collection and/or processing, literature review: F.K.; analysis and/or interpretation, materials: M.Y.

Conflict of Interest: The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding: The authors received no financial support for the research and/or authorship of this article.

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