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Isolated anterior left ventricle aneurysm: a rare complication of acute myocardial infarction

İzole anterior sol ventrikül anevrizmasi: akut myokard infarktüsünün nadir bir komplikasyonu

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Abstract

The left ventricular aneurysms are complication of acute myocardial infarctions. In the setting of acute myocardial infarctions, the left ventricular wall may be weakened and myocardial remodeling and fibrous scar formation occur. Of all true left ventricular aneurysms, 85% involve the apical and anteroseptal walls of the heart, but isolated anterior wall aneurysms are rare. An 82-years-old woman with a history of left ventricular dysfunction presented with pulmonary edema. A transthoracic echocardiography revealed severe left ventricular dysfunction with anteroapical bulging. Coronary angiography revealed triple vessels coronary artery disease. She was prepared to operation. Under cardiopulmonary bypass, Dor ventriculoplasty and triple-vessels coronary artery bypass grafting were made. The postoperative course was uneventful; the patient was discharged on the seventh postoperative day.

Keywords: Myocardial infarction, heart aneurysm.

Özet

Sol ventrikül anevrizmaları akut myokard infarktüsünün bir komplikasyonudur. Akut myokard infaktusu sırasında sol ventrikül duvarı zayıflayarak myokardiyal yeniden şekillenme ve fibröz skar doku gelişimi görülebilir. Tüm gerçek ventrikül anevrizmalarının %85'i kalbin apekal ve antero septal duvarını içerir; ancak izole anterior duvar anevrizmaları oldukça nadirdir. Öyküsünde kalp yetmezliği bulunan 82 yaşında kadın hasta pulmoner ödem ile başvurdu. Yapılan transtorasik ekokardiyografi de ciddi sol ventrikül disfonksiyonu ile birlikte anteroapikal anevrizma saptandı. Koroner angiografide üç damar hastalığı saptandı. Hasta operasyona için hazırlandı. Kardiyopulmoner baypas altında üç koroner artere baypas ve Dor ventriküloplasti girişimi uygulandı. Postoperatif dönem sorunsuz geçen hasta yedinci gün taburcu edildi.

Anahtar sözcükler: Miyokart enfarktüsü, kalp anevrizması.

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Introduction

The left ventricular (LV) aneurysms are complication of acute myocardial infarctions (AMI) [1]. In the setting of AMI, the left ventricular wall may be weakened and myocardial remodeling and fibrous scar formation occur. A true aneurysm results from gradual thinning of the portion of the ventricular wall after transmural infarction [2]. Of all true left ventricular aneurysms, 85% involve the apical and anteroseptal walls of the

heart but isolated anterior wall aneurysms are rare [3]. In this report, a case of an isolated the left ventricle true aneurysm on the anterior wall due to a previous anterior myocardial infarction, which was repaired successfully, is presented.

Case Report

An 82-year-old woman with a history of left ventricular dysfunction presented with pulmonary edema. Her ECG showed sinus rhythm with septal Q waves, 1-mm ST elevation, and nonspecific ST-T wave changes. A transthoracic echocardiography (TTE) revealed moderate to severe left ventricular dysfunction with anteroapical bulging and mild mitral regurgitation. Cardiac catheterization revealed triple vessel coronary artery disease. Left ventriculography showed a dilated ventricle with severe left ventricular dysfunction and an ejection fraction of 27%, anteroapical wall akinesia, and a bulge in the anterior wall.

Under cardiopulmonary bypass, moderate hypothermia, and cold crystalloid cardioplegia, anterior left ventriculotomy was performed over the aneurysm (Figure 1 and Figure 2).

Figure 1. Intraoperative view of the aneurysm.

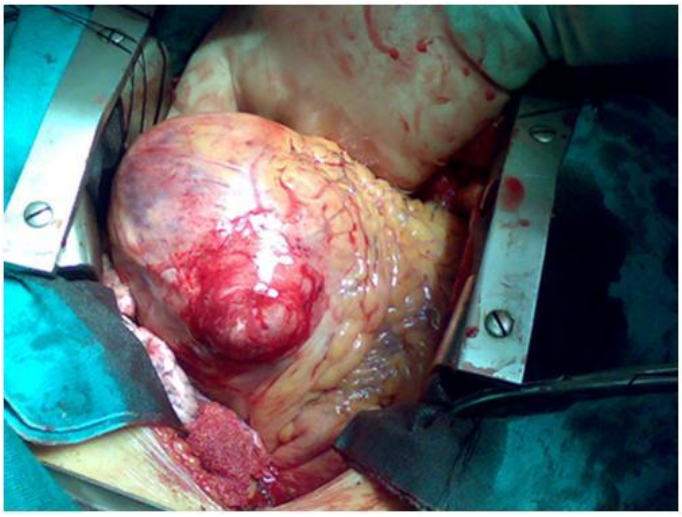
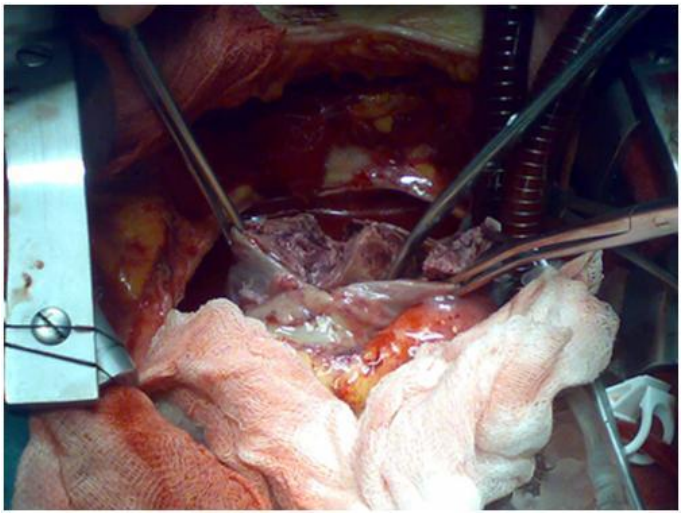


Figure 2. Intraoperative view of the aneurysm after the incision.



There was thrombus in the aneurismal area. Thrombus evacuated and non-guided encircling cryoablation for treatment of ventricular arrhythmia was performed. After clearing the aneurismal sac, Teflon patch, which was then sutured between the neck portion of the aneurysm and the roof of the interventricular septum via 2.0 prolen stiches by Jatene technique, was excised and shaped according to ventricular geometry. Teflon patch was covered with aneurismal sac, which was folded up on it, and complete ventriculoplastylaplasty was made. Then, right coronary and circumflex coronary arteries were anastomosed via 7.0 prolen suture by using saphenous vein grafts. Following the anastomosis of left internal mammary artery to left anterior descending artery, deaeration was made and hot cardioplegy was started with the careful removal of cross clamp. Proximal anastomoses were made under side clamping. Total cross clamp period was 44 min with the perfusion period of 65 minutes. After decannulation, hemorrhage control was made along with closure of sternum appropriately. Histopathological examination of the resected material was confirmed the diagnosis of true aneurysm. The postoperative course was uneventful; the patient was discharged on the seventh postoperative day.

Discussion

True aneurysms are complications of transmural myocardial infarction and it occurs in approximately 7.6% of patients with coronary artery disease [4]. True aneurysms characteristically have a broad-based neck in relation to the rest of the aneurysm with a wall containing all 3 layers of cardiac tissue. In contrast to true aneurysms, pseudo aneurysms are characterized by a small, narrow-necked channel that connects the ventricle with a larger aneurismal sac containing blood and thrombus, and lined by fibrous pericardial tissue without any myocardial elements. The differentiation of pseudoaneurysm versus true aneurysm is crucial. TTE is the most common modality to diagnose LV aneurysms. Left ventriculography has been the gold standard modality to distinguish pseudoaneurysm from true LV aneurysm with a diagnostic accuracy of >85% [5, 6]. We established the diagnosis of LV true aneurysm preoperatively by TTE and left ventriculography and postoperative histopathological examination of the resected material confirmed it.

Surgical resection of the true aneurysm is necessary only when refractory angina pectoris, congestive heart failure, systemic embolization, or refractory arrhythmias are present [6, 7]. Our patient had refractory angina pectoris and congestive heart failure. Various surgical techniques other than classic linear repair such as endoventricular patch plasty and inverted T closure have been suggested for LV aneurysm surgery. The endoventricular patch plasty method is thought to be more physiologic and more protective for normal left ventricular shape. Endoventricular patch plasty remodeling method we have used too. Surgical treatment of the LV true aneurysm, along with myocardial revascularization or mitral valve repair or replacement, improves symptoms in the great majority of patients [7, 8]. In the present case, surgical treatment of the isolated anterior LV aneurysm along with triple-vessel coronary artery bypasses grafting.

In conclusion, LV true aneurysm is an unusual but important and insidious complication of AMI and surgical intervention is a successful treatment method of the LV true aneurysm.

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