



Recurrent Left Ventricular Apical Pseudoaneurysm at the Site of Previous Patch Repair; a Case Report

Zahra Alizadeh Sani^{1,2}, Mehrdad Salehi³, Behshid Ghadrdoost¹, Mozhgan Jafarpour⁴ and Mohaddeseh Behjati^{1,*}

¹Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences, Tehran, Iran

²Omid Hospital, Iran University of Medical Sciences, Tehran, Iran

³Department of Psychiatry, Isfahan University of Medical Sciences, Isfahan, Iran

⁴Radiology Technology Department, School of Allied Medical Sciences, Shaheed Beheshti University of Medical Sciences, Tehran, Iran

*Corresponding author: Rajaie Cardiovascular Medical and Research Center, Iran University of Medical Sciences, Tehran, Iran. Email: dr.mohaddesehbehjati@gmail.com

Received 2021 October 20; Accepted 2022 March 04.

Abstract

Our case was a 70-year-old male with a past history of coronary artery bypass graft surgery and true aneurysmectomy seven years ago who presented with chest pain and dyspnea. Echocardiography demonstrated scarred and aneurysmal apex (6.15 cm × 2.19 cm) with a small rupture just at most protruding part of it, to and from flow across this rupture site resulted in slow oozing of blood into pericardial sac with mobile clot in apex, clot formation in pericardial sac extended into both apical parts and distorted apical and apicoseptal geometry without communication with right ventricular cavity. Cardiac MRI (CMR) showed the following data: large apical pseudoaneurysm at the site of ruptured patch (depth: 46 mm, width: 60 mm), narrow orifice (5 mm), septated left ventricular apical outpouching surrounded by apical layers and included clots in different sizes and ages. He underwent a successful surgical operation. In this case, CMR provides excellent images essential for patient management.

Keywords: Pseudoaneurysm, Aneurysmorrhaphy, Coronary Artery Bypass Graft Surgery

1. Introduction

Ruptured left ventricular pseudoaneurysm is per se a rare clinical entity and it would be low at the site of previous pseudoaneurysmorrhaphy (1). It needs high clinical suspicion index however planning a patient for surgery needs confirmation by imaging (2). In this case, cardiac MRI (CMR) provides excellent images essential for patient management (3).

2. Case Presentation

Our case was a 70-year-old male who presented with chest pain and dyspnea. In his past medical history, coronary artery bypass graft surgery and aneurysmectomy seven years ago was noticeable. Echocardiography data were as follows: Severe left ventricular (LV) systolic dysfunction (LVEF = 20 - 25%) with severe LV enlargement, scarred all apical segments, mid inferoseptal, mid anteroseptal walls, aneurysmal apex (6.15 cm × 2.19 cm) with a small rupture just at the most protruding part of it, to and from flow across this rupture site resulted in slow oozing of blood into pericardial sac with mobile clot in

apex, clot formation in pericardial sac extended into biventricular apical parts and distorted apical and apicoseptal geometry without any communication with right ventricular cavity. Coronary angiography revealed three vessel diseases with patent grafts. Cardiac MRI images confirmed the presence of ruptured LV apex at the site of previous aneurysmorrhaphy patch and he underwent redo-pseudoaneurysmorrhaphy.

CMR data were as follows: Large pseudoaneurysm (depth: 46 mm, width: 60 mm), narrow orifice (5 mm), ruptured LV apical cap, septated LV apical outpouching surrounded by pericardial layers and included clots in different sizes and ages with no evidence of communication into RV cavity (Figure 1A and D). He underwent successful surgical resection of biventricular pseudoaneurysm.

3. Discussion

Recurrent rupture of LV pseudoaneurysm at the site of previous repair is a really rare but catastrophic clinical entity which occurs due to lack of myocardial support. This medical emergency condition leads to immediate collapse

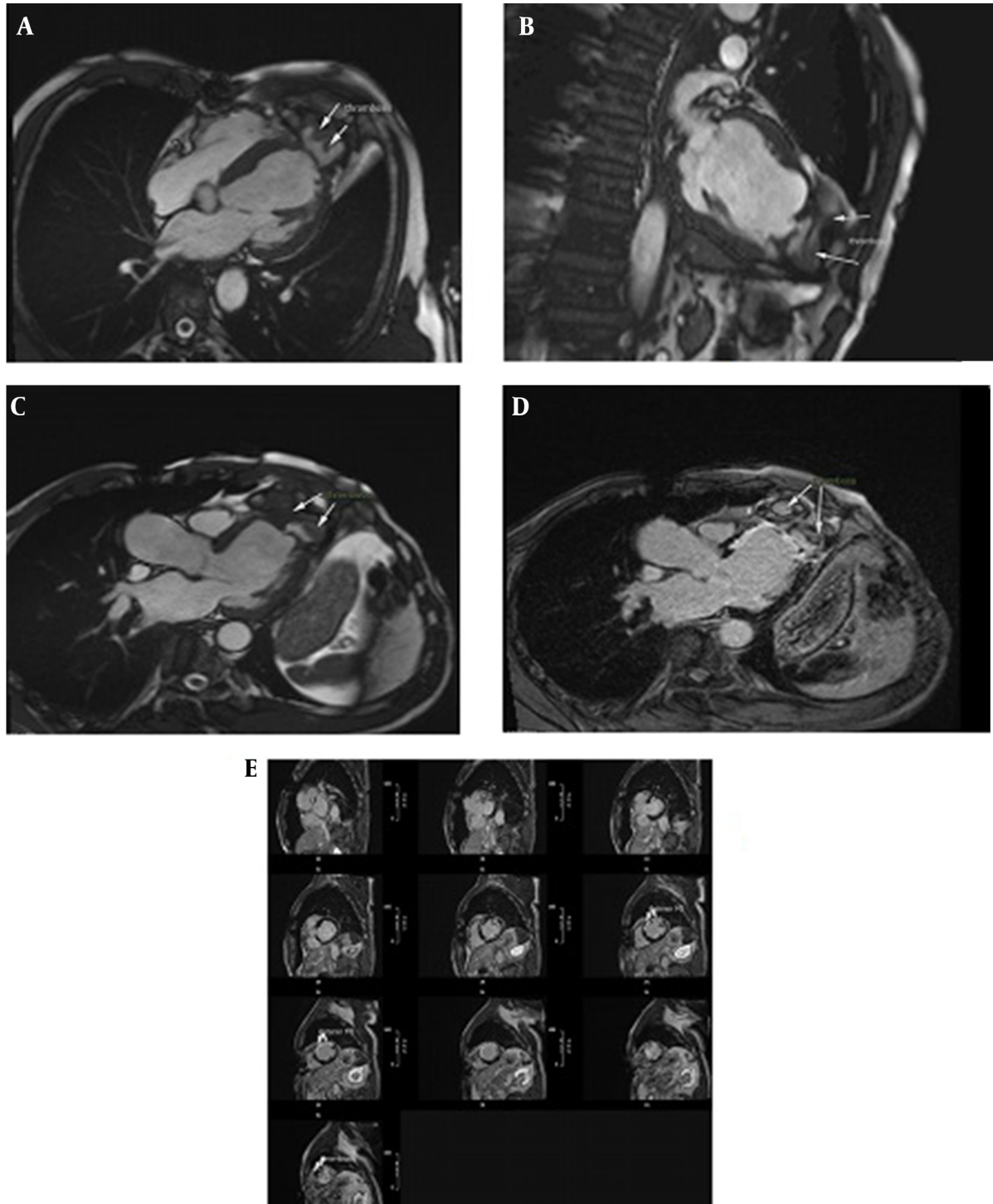


Figure 1. (A), (B), (C): Cardiac MRI cine SSFP images in long axis views showed large left ventricular (LV) apical pseudoaneurysm with a free communication with the LV cavity (depth: 46 mm, width: 60 mm), narrow orifice (5 mm), ruptured LV apical cap, septated LV apical outpouching surrounded by pericardial layers and included clot (arrow) in different sizes with extension of pseudoaneurysm over right ventricle (RV) apex with no evidence of communication into RV cavity; (D), (E): Late gadolinium enhanced CMR images detected thrombus (arrow) within the pseudoaneurysm and also demonstrated enhancement within the wall of the pseudoaneurysm and surrounding aknetic segments indicative of anterior MI (arrow head).

and electromechanical dissociation without prompt surgical intervention (4). Since most of the signs and symptoms are indistinguishable from ischemic ones, misdiagnosis rate would be high without enough clinical suspicion. In some instances, multiple imaging modalities are needed for a precise diagnosis. Cardiac MRI could determine the precise location of rupture and its extension with high sensitivity and specificity (5). In this case, extension of pseudo aneurysm to biventricular apices is determined using CMR which is really rare and is indicator of extensive myocardial rupture.

3.1. Conclusions

Recurrent ruptured pseudoaneurysm at the site of previous pseudoaneurysmorrhaphy is really a rare clinical entity especially in the case of biventricular apical extension. It needs high clinical suspicion index but planning a patient for surgery needs confirmation by imaging. In this case, CMR is really a good imaging modality for patient management.

Footnotes

Authors' Contribution: Study concept and design: Z. A. S., M. B.; acquisition of data: M. S., B. Gh., M. B., M. J., M. J.; analysis and interpretation of data: B. Gh.; drafting of the manuscript: M. S., B. Gh., M. B., M. J.; critical revision of the manuscript for important intellectual content: Z. A. S., M. B.; Statistical analysis: B. Gh.; administrative, technical, and material support: Z. AS., M. B., B. GH.; study supervision: Z. A. S., M. B.

Conflict of Interests: There are no conflicts of interest.

Funding/Support: None.

Informed Consent: The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

References

1. Si D, Shi K, Gao D, Yang P. Ruptured left ventricular pseudoaneurysm in the mediastinum following acute myocardial infarction: a case report. *Eur J Med Res.* 2013;**18**:2. [PubMed: 2336965]. [PubMed Central: PMC3567981]. <https://doi.org/10.1186/2047-783X-18-2>.
2. Alapati L, Chitwood WR, Cahill J, Mehra S, Movahed A. Left ventricular pseudoaneurysm: A case report and review of the literature. *World J Clin Cases.* 2014;**2**(4):90-3. [PubMed: 24749118]. [PubMed Central: PMC3985042]. <https://doi.org/10.12998/wjcc.v2.i4.90>.
3. Gill S, Rakhit DJ, Ohri SK, Harden SP. Left ventricular true and false aneurysms identified by cardiovascular magnetic resonance. *Br J Radiol.* 2011;**84**(998):e35-7. [PubMed: 21257833]. [PubMed Central: PMC3473856]. <https://doi.org/10.1259/bjrr/25590962>.
4. Mujanovic E, Bergsland J, Avdic S, Stanimirovic-Mujanovic S, Kovacevic-Preradovic T, Kabil E. Surgical treatment of left ventricular pseudoaneurysm. *Med Arch.* 2014;**68**(3):215-7. [PubMed: 25568538]. [PubMed Central: PMC4240329]. <https://doi.org/10.5455/medarch.2014.68.215-217>.
5. Dutta R, Kahn AM, Rathod A, Greenberg B. Utility of cardiac magnetic resonance imaging in evaluating left ventricular pseudoaneurysm. *Congest Heart Fail.* 2008;**14**(2):91-4. [PubMed: 18401218]. <https://doi.org/10.1111/j.1751-7133.2008.07838.x>.