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Successful surgical repair of left ventricular pseudoaneurysm in a patient with subacute ST-elevation myocardial infarction

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Author contributions

CM and EB have designed the study; RC, GI, VC, SC, GL, BR, MM, GR, EP, CM, and EB have acquired and have analysed the data. RC, GI, VC, SC, GL, BR, MM, GR, EP, CM, and EB have drafted the work and substantively revised it. All authors read and approved the final manuscript.

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Declaration of Conflicting Interests

The authors declare that there is no conflict of interest.

ABSTRACT

We report a successful surgical repair of left ventricular pseudoaneurysm in a patient with subacute ST-elevation myocardial infarction (STEMI). In the case of expansion of the infarct related ventricular wall, early (within 24 hours) or late (3-5 days after STEMI) cardiac rupture should be always borne in mind in order to proceed to life saving prompt surgical repair.

INTRODUCTION

Cardiac rupture occurs in 1% to 6% of all patients admitted with subacute ST-elevation myocardial infarction (STEMI) [1]. It should be considered for urgent cardiac surgical repair [1].

CASE REPORT

A 65-year-old man was admitted to the emergency department for abdominal pain begun 4 days before. Past medical history consisted of ischemic stroke and diabetes mellitus. Of note, he was not taking any medication. Vital signs: blood pressure 90/50 mmHg, heart rate 50/minute, respiratory rate 18/minute, body temperature 36.5°C; saturation oxygen level 93%. High-sensitivity cardiac troponin was mildly elevated (121 pg/mL). Electrocardiogram showed sinus bradycardia, Q waves with ST elevation in antero-lateral leads consistent with subacute STEMI. Transthoracic echocardiogram (TTE) revealed aneurysmatic expansion of apical left ventricular (LV) walls (ejection fraction 30%) with a large apical thrombus (35x15 mm) [2]. Coronary angiography showed complete occlusion of proximal left anterior descending artery and a critical stenosis of right coronary artery; percutaneous coronary intervention with stent implantation on right coronary artery was performed. He received triple antithrombotic therapy with aspirin, clopidogrel, intravenous heparin first and then oral anticoagulation with warfarin [2,3]. During coronary care unit stay, the patient was asymptomatic and hemodynamically stable. However, a control TTE (day 6) in cardiology ward revealed the presence of pseudoaneurysm with an oval out-pouching (23 × 13 mm) from the apical aspect of LV septum, communicating with the LV chamber through a passage measuring 1.6 cm. Partially organized pericardial effusion was evident around right ventricular free wall (Figure 1). Thus, the patient was immediately transferred to the cardiac surgery department for urgent surgical repair [1]. The LV anterior wall rupture with pseudoaneurysm was then treated with endoaneurysmectomy of the LV with dacron patch and freewall reconstruction with prolene sutures and teflon felt stripes (Figure 2).

The patient was finally discharged 3 weeks after surgery with betablockers, ace- inhibitors, diuretics, statins and dual antiplatelet therapy with aspirin and clopidogrel. At one month follow-up visit, the patient was hemodynamically stable with acceptable functional capacity.

DISCUSSION

LV pseudoaneurysms (rare clinical and anatomopathological entity) occur when cardiac rupture is contained by adherent pericardium or scar tissue. Most common aetiology is myocardial infarction. Due to non specific symptoms the diagnosis is challenging (up to 10% of patients can be asymptomatic) [4]. Echocardiography is considered to be the first line diagnostic imaging. Cardiac MRI remains an additional valid option if specific anatomo-functional details are needed.

CONCLUSION

In the case of expansion of the infarct related ventricular wall, early (within 24 hours) or late (3-5 days after STEMI) cardiac rupture should be always borne in mind in order to proceed to life saving prompt surgical repair [3]. However surgical mortality rate remains high (up to 60%) [5].

REFERENCES

1. Antman EM, Anbe DT, Armstrong PW, et al. ACC/AHA guidelines for the management of patients with ST-elevation myocardial infarction executive summary. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (Writing Committee to revise the 1999 guidelines for the management of patients with acute myocardial infarction). *J Am Coll Cardiol* 2004;44:671-719.
2. Ibanez B, James S, Agewall S, et al.. 2017 ESC Guidelines for the management of acute myocardial infarction in patients presenting with ST-segment elevation: The Task Force for the management of acute myocardial infarction in patients presenting with ST-segment elevation of the European Society of Cardiology (ESC). *Eur Heart J* 2018;39:119-77.
3. Wong GC, Welsford M, Ainsworth C, et al. 2019 Canadian Cardiovascular Society/Canadian Association of Interventional Cardiology Guidelines on the Acute Management of ST-Elevation Myocardial Infarction: Focused Update on Regionalization and Reperfusion. *Can J Cardiol* 2019;35:107-32.
4. Frances C, Romero A, Grady D. Left ventricular pseudoaneurysm. *J Am Coll Cardiol* 1998;32:557-61.
5. McMullan MH, Maples MD, Kilgore TL Jr, Hindman SH. Surgical experience with left ventricular free wall rupture. *Ann Thorac Surg* 2001;71:1894-8; discussion 1898-9.

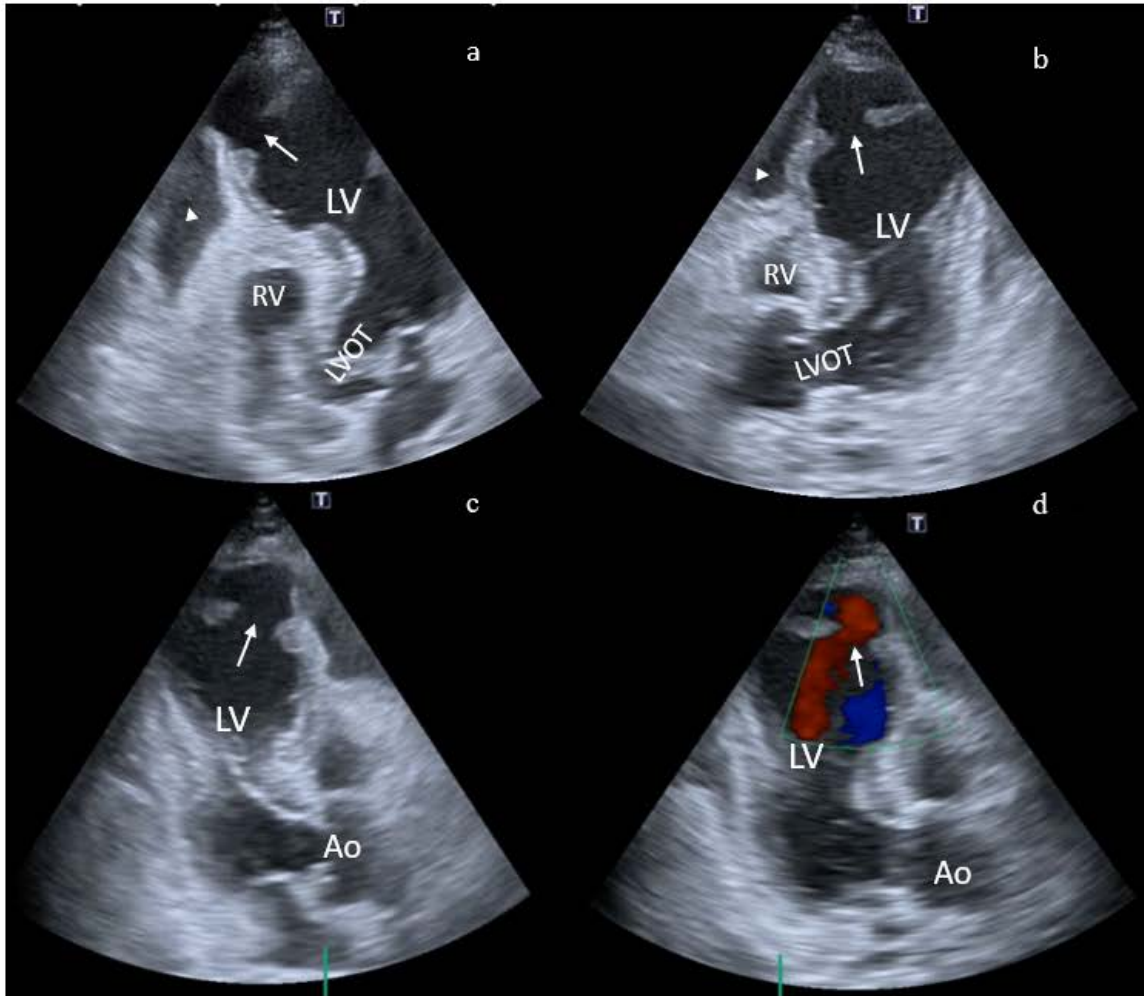


Figure 1, Modified five chamber view (a, b) and three chamber view (c, d) showing apical LV pseudoaneurysm (arrows) with moderate pericardial effusion (arrowhead); color Doppler through the passage (arrow) in 3 chamber view (d). LV, left ventricular.

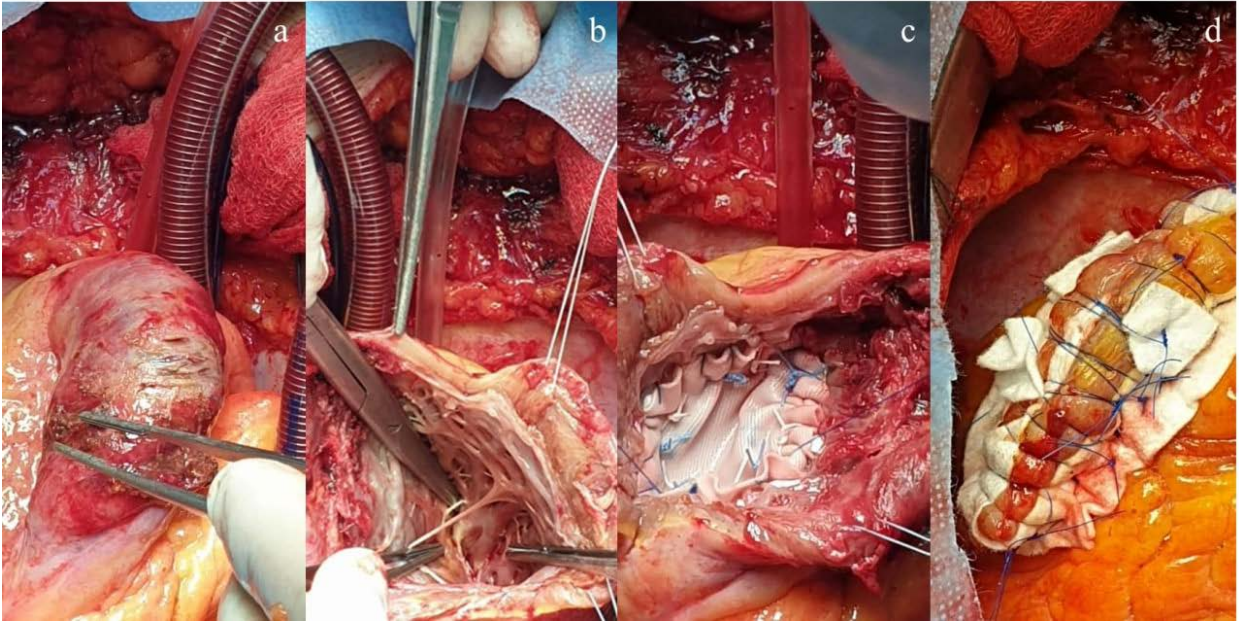


Figure 2. Steps of the surgical repair: the pseudoaneurysm (a), the LV chamber after pseudoaneurysm excision (b) and the ventriculoplasty (c, d). LV, left ventricular.