Huge left ventricular pseudoaneurysm rupture in an African young adult patient

Michele di Summa, Federica Iezzi*, Gilbert Oburu and Nikita Mehta

Department of Cardiothoracic and Vascular Surgery, Kenyatta National Hospital and University of Nairobi, Nairobi, Kenya

* Corresponding author. Department of Cardiothoracic and Vascular Surgery, Kenyatta National Hospital and University of Nairobi, Hospital Road, Upper hill, 00202 Nairobi, Kenya. Tel: +254-737-026773; e-mail: federicaiezzi@hotmail.it (F. Iezzi).

Abstract

A pseudoaneurysm of the ventricle is formed when there is rupture of the myocardial wall with the discontinuity being roofed over by the pericardium and mural thrombus or fibrous tissue without myocardial elements. Cardiac pseudoaneurysm is a rare and a potentially life-threatening event. Early prophylactic surgical aneurysmectomy has been the treatment of choice. In this context, we report an unusual case of giant left ventricular pseudoaneurysm, as a result of unknown aetiology, appearing like a pulsatile mass, which was easily seen from the chest wall, in a young female, successfully treated with surgery.

Keywords: Left ventricular pseudoaneurysm • Young patient • Surgical correction

INTRODUCTION

Free-wall pseudoaneurysms of the left ventricle are rare in young people. They may be congenital, follow trauma or infarction of the left ventricle and may be infective or inflammatory in origin. Congenital aneurysms occur in the subvalvular parts of the mitral or aortic valves and appear to be caused by a weakness in the annular attachment to the myocardium. Less commonly, they may be situated in the apical region of the left ventricle [1].

Left ventricular pseudoaneurysms appear when cardiac rupture is contained by adherent pericardium or scar tissue. Free intrapericardial rupture usually results in cardiac tamponade and death. Less frequently, cardiac rupture is contained and left ventricle pseudoaneurysm formation occurs. Although left ventricle pseudoaneurysm is clinically uncommon, diagnosis is difficult and rupture often leads to death.

CASE REPORT

A 29-year old woman was referred for the evaluation of chest pain associated with palpitations that had been developing for 3 months. Her previous medical history and the family history were non-contributory.

The physical examination revealed a heart rate of approximately 116 beats/min with a regular heart rhythm while her blood pressure was 140/80 mmHg with 20 breaths/min. The pulmonary and abdominal examination was unremarkable.

Cardiovascular examination found a pulsatile, expanding precordial bulging and a mesocardiac systolo-diastolic murmur. Physical exam showed ulcerated chest wall skin in correspondence of precordial pulsatile mass (Fig. 1). The patient had non-specific laboratory inflammatory signs. Chest radiography showed cardiomegaly and aneurysmal deformation of the left middle and lower heart borders. 12-lead electrocardiogram showed a regular sinus rhythm and initial signs of left atrial and ventricular hypertrophy.

Transthoracic echocardiography showed mild hypertrophy and dilatation of the left ventricle, normal ejection fraction and, finally, a large left ventricular apical pseudoaneurysm of massive dimension (84 × 102 mm), with thin wall and thin neck (2.5 × 3 mm), which extended over the chest wall (Fig. 2).

Echocardiography demonstrated the blood flow between the left ventricle and the pseudoaneurysmal sac. No other significant intracardiac anomalies were found. The patient underwent emergency cardiac surgery. At surgical opening, severe haemorrhagic pericarditis was found.

During surgery, using extracorporeal circulation, a huge and fibrotic pseudoaneurysmal sac, with thin wall, was resected, from the apex of the left ventricle. A fair communication of about 2–3 cm between left ventricular cavity and pseudoaneurysm was found. The left ventricle was remodelled by primary triple-layered suture with 3–0 Prolene, reinforced with pledges. The postoperative course was uneventful and the patient remains asymptomatic ever since.

The anatomopathological study showed abundant fibrous tissue with areas of acute and chronic inflammation, with an abundant of neutrophils and thrombotic area. No bacterial or mycotic growth was found.

DISCUSSION

Two types of left ventricular aneurysms are recognized: the true aneurysm and pseudoaneurysm [2]. True aneurysms are defined as areas of dyskinetic and thinned myocardium involving the full thickness of the wall. On the other hand, pseudoaneurysms are a...
As the disease progressed, the blood became organized in the mediastinum and formed a thrombus. The pericardium displayed hyaline degeneration and underwent adhesion with the pleura to become hardened tissue. Additionally, the presence of the oblique pericardial sinus inhibited the persistent and rapid expansion of the haematoma.

When a patient is seen with a pulsatile mass detected on the chest wall, left ventricular pseudoaneurysm should be considered in the differential diagnosis. Left ventricular pseudoaneurysm usually presents with heart failure. However, some patients may have recurrent tachyarrhythmia, progressive dyspnoea, non-specific chest pain and thromboembolism, or remain clinically silent.

Considering the high risk of expansion and rupture of the pseudoaneurysm, treatment consists of immediate surgical resection of the pseudoaneurysm after the diagnosis is made.

Conflict of interest: none declared

REFERENCES


eComment. Ventricular pseudoaneurysms in postsurgical cardiac patients

Author: Senol Yavuz
Cardiovascular Surgery, Bursa Yuksek Ihtisas Education and Research Hospital, Bursa, Turkey
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I read with great interest the paper by di Summa et al. [1]. They report an interesting case of giant left ventricular (LV) pseudoaneurysm. LV pseudoaneurysm is a rare but potentially fatal complication of transmural acute myocardial infarction. It usually develops when ventricular free wall rupture is contained by pericardial adhesions or scar tissue, organizing thrombus, and haematoma [2,3]. The most common location of post-myocardial infarction pseudoaneurysm is the inferior or posterolateral wall of the LV. This pseudoaneurysm has a high morbidity, a risk of spontaneous rupture and sudden death. The most common aetiologic cause of LV pseudoaneurysm is myocardial infarction, followed by cardiovascular surgery, previous chest trauma, infectious agents such as salmonella, or inflammation [2,3]. In some instances, the aetiology of LV pseudoaneurysm may be unclear. di Summa et al. [1] found no aetiologic cause in their patient. I would like to add some comments on postsurgical cardiac pseudoaneurysms.

Postsurgical cardiac pseudoaneurysms can present as a complication of previous cardiovascular surgery, more commonly after mitral valve surgery. They may also occur after iatrogenic cardiac trauma (pericardiocentesis, epicardial lead implantation, endomyocardial biopsy, attempted VSD repair), aortic valve surgery, repair of left ventricular aneurysm (partial suture dehiscence after aneurysm resection), complete repair of tetralogy of Fallot (right ventricular pseudoaneurysm = dehiscence of the sutures used to place materials between the right ventricle and the pulmonary artery), endocarditis, tumour invasion, and apical venting [2–5]. Postsurgical pseudoaneurysms occur in 0.02% to 2.0% of mitral valve surgery [2,4]. In these patients, postsurgical adhesions may contain the rupture and prevent tamponade. They were divided into acute when diagnosed within 2 weeks, and chronic when identified more than 3 months after cardiac surgery [2]. Acute forms are extremely unstable and prone to fatal rupture. The causes of postsurgical LV pseudoaneurysms are not