Case report

A rare case of left ventricular pseudoaneurysm after mitral valve replacement.

ABSTRACT

We report the case of a 28 years old female patient operated for mitral valve replacement. The baseline postoperative transthoracic echocardiography at 8 weeks after surgery revealed an anechoic addition image of the basal segment of LV posterior wall with a discontinuity between the posterior wall and the plane of insertion of the mitral mechanical valve measuring 26x17 mm. It seems to be limited by the pericardium, filled by color Doppler in diastole and empties in systole very suggestive of LV pseudoaneurysm. The patient was referred to cardiac surgery for surgical repair.

KEYWORDS

Left ventricular pseudoaneurysm, mitral valve replacement, cardiac surgery

ABBREVIATIONS

ACE: Angiotensin-converting enzyme
CT: Computed Tomography
MVR: Mitral valve replacement
MR: Magnetic resonance
LV: Left ventricle
LVPA: Left ventricular pseudoaneurysm

1. INTRODUCTION

Cardiac pseudoaneurysm is defined as a rupture of the myocardium that is contained by pericardial adhesions or the epicardial wall , which needs to be differentiate from true left ventricular (LV) aneurysm.(1)

Pseudoaneurysm is reportedly a rare complication of myocardial infarction. Pseudoaneurysm can also occur after cardiac surgery, chest trauma, and endocarditis (2). Left ventricular pseudoaneurysm (LVPA) after mitral valve replacement (MVR) is a rare condition (3). Knowledge of the clinical profile and natural history of cardiac pseudoaneurysm is limited because of its low incidence. We report a very rare case of left ventricular pseudoaneurysm after mitral valve replacement.

2. CASE PRESENTATION

We present the case of a young female patient of 28 years, who had as a history of articular rheumatism under extencillin since she was 9 years old. She was diagnosed with mitral stenosis in January 2019 for which she was operated in September 2019 with mitral valve replacement. The immediate postoperative echocardiographic assessment period did not reveal any significant abnormalities. The patient was discharged 12 days after cardiac surgery under anticoagulant treatment. She presented 8 weeks after mitral valve replacement surgery for baseline postoperative control of her prosthesis. the clinical examination found a patient in good general condition, afebrile with blood pressure at 123/64mmhg and heart rate at 70 beats per minute without any symptoms or signs of right or left heart failure. on cardiac auscultation, the prosthetic click was audible, with no added murmur and the peripheral pulses were well perceived. The electrocardiogram registered a regular sinus rhythm at 72 beats per minute, fixed PR interval at 160ms, fine QRS without secondary repolarization disorder. Transthoracic echocardiography showed a non-dilated left ventricle (LV), with preserved global systolic function. The basal segment of LV posterior wall was seat of an image of addition with a discontinuity between the posterior wall and the plane of insertion of the mitral mechanical valve. This discontinuity represents the base of an anechoic cavity measuring 26 mm at the level of its implantation base and 17 mm in depth. The cavity is visible on parasternal long axis, parasternal short axis and apical 4-cavity views. It seems to be limited by the pericardium, without a wall of its own (Figure1). It is filled by color Doppler in diastole and empties in systole (Figure 2) without any contraction movement of the wall cavity during systole. This image is very suggestive of LV pseudoaneurysm. The prosthetic mitral valve had a good function with an average transmitral gradient at 3.5 mmHg without pathological paraprosthetic leakage. The patient was referred to cardiac surgery for surgical repair. However, the patient refused to undergo a second surgery after knowing operative risks. She was put on an Angiotensin-converting enzyme (ACE) inhibitor and beta-blockers to limit cardiac remodeling and reduce the risk of pseudoaneurysm rupture. The patient was unfortunately lost of sight.

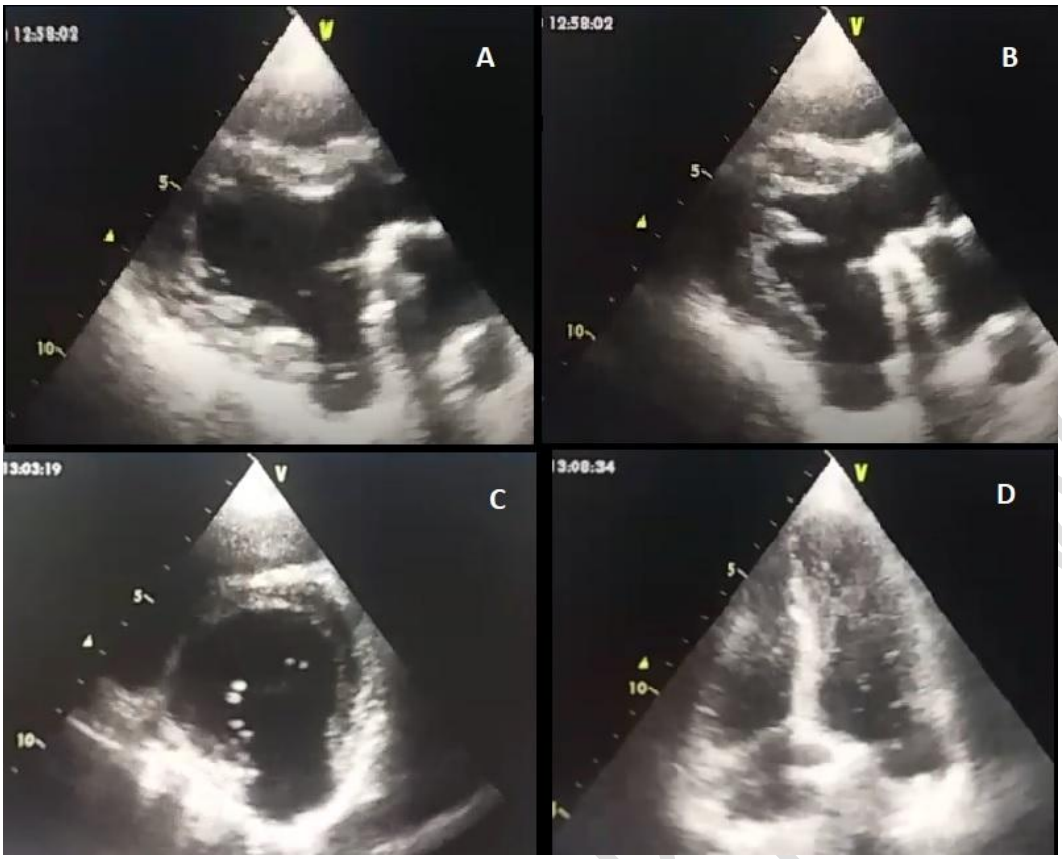

Figure 1: Transthoracic echocardiography (A) Parasternal long axis view during diastole (B) Parasternal long axis view during systole (C) parasternal short axis view (D) Apical 4 chamber view: showing the addition image with LV posterior wall discontinuity suggestive of LV pneudoaneurysm.

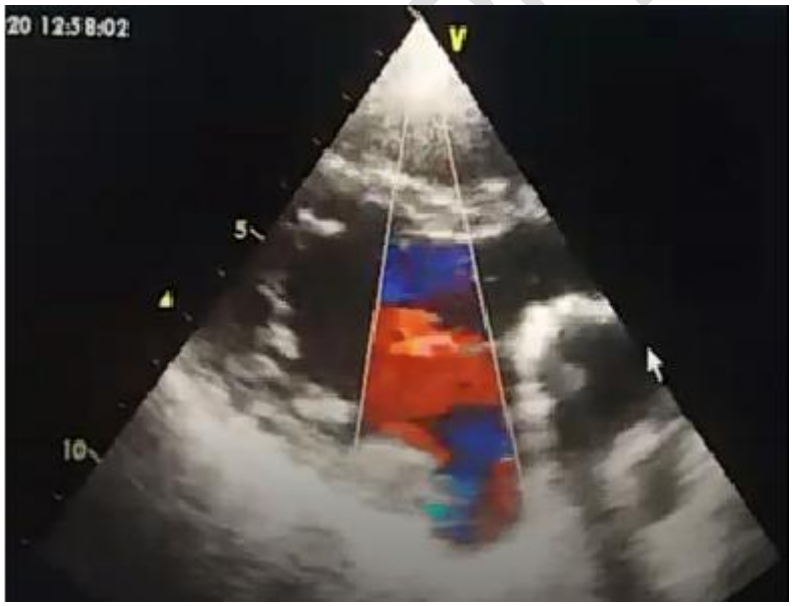

Figure 2: Transthoracic echocardiography long axis parasternal view showing the Doppler color filling during diastole of the addition image.

3. DISCUSSION

Left ventricular pseudoaneurysm (LVPA) is a rare but deadly complication of myocardial infarction and mitral valve replacement (MVR), occurring in fewer than 0.1 percent of MVR (4). It can happen after both repair and replacement of the mitral valve. This complication occurred 0.56 percent of the time, with a 57.4 percent death rate (5). Left ventricular pseudoaneurysm after mitral valve replacement resulted from the defect of normal myocardium due to excessive debridement of subannular myocardium, tissue necrosis induced by suturing the prosthetic sewing ring, or being careless in dissection of severe myopericardial adhesions that may increase the risk of left ventricular rupture (6). Localisation of pseudoaneurysm after myocardial infarction is the inferior and postlateral walls. Post-traumatic pseudoaneurysms are usually found on the anterior wall of the left ventricle, while pseudoaneurysms occurring after infectious endocarditis tend to be located in the mitral-aortic intervalvular fibrosa (2).

Only when the LV rupture is barely controlled by adhering pericardium or scar tissue can a left ventricular pseudoaneurysm form (7). The diagnosis can be confirmed by doppler echocardiography, which is currently the reference. It contains crucial information on the defect's architecture and location, as well as the presence of a thrombus or related valvulopathy (8). Alternatives to duplex sonography include computed tomography (CT) and magnetic resonance (MR) angiography, both of which carry risks due to the use of contrast agents and radiation exposure for CT (9). Transesophageal echocardiography helps demonstrate the relationship between the pseudoaneurysm and other heart structures. Moreover, transesophageal echocardiography can help establish the paravalvular leak and regurgitation (10) When the diagnosis is established, surgical correction is usually mandatory (11). Despite the fact that immediate surgical repair is suggested as the primary line of defence against LVPA rupture, surgical repair may be hesitant due to the high mortality rate (5).

CONCLUSION

LV pseudoaneuvrysm is a very rare finding after mitral valve replacement, the diagnosis is made with echocardiography and treatement is based on surgical correction.

Ethical Approval:

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

Consent

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

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