Left Atrial Dissection by Infectious Endocarditis of Mitral Valve

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Introduction

Left Atrial Dissection (LAD) is a rare entity defined as the forced separation of the left atrial wall layers by blood, most commonly associated with cardiac surgery. Only isolated cases have been described. The true incidence, etiology and management of this disease are not known. We describe a case of left atrial dissection after infective endocarditis of the native mitral valve. A rare complication that deserves to be recognized and treated urgently.

Case Report

Male patient, 30 years old, presented onset of heart failure symptoms one year ago and worsening of dyspnea associated with fever for seven days.On physical examination the patient was awake, oriented, regular rhythm, systolic murmur (3+/6+) in mitral focus, pulmonary auscultation with rales in the lower two thirds, lower limb edema (4+/4+), scaly lesions on the back and blood pressure 140 x 90 mmHg.

Transthoracic echocardiogram showed cavitary images at the posterior mitral valve annulus, with partial destruction of the posterior leaflet and partial dissection of the posterior left atrial wall (Figure 1). A mobile image measuring about 6 x 7 mm near the left atrial septal wall suggested vegetation (Figure 2), and severe mitral regurgitation and coaptation failure of the tricuspid valve with severe regurgitation. Pulmonary artery systolic pressure (PASP) was estimated at 68 mmHg and a slight pericardial effusion was observed.

The patient underwent emergency surgery with findings of insufficient mitral valve with chordae rupture, necrotic tissue involving the posterior leaflet and interatrial and interventricular septa (septal wall abscess). Mitral valve was replaced by bioprosthesis, and correction of septal wall, tricuspid annuloplasty (De Vega technique) and resection with reconstruction of the left ventricular band by abscess were carried out. The patient was discharged under a stable condition and outpatient monitoring.

After one year and five months, the patient was again admitted with fever and decompensated heart failure. At that moment, transesophageal echocardiogram showed mitral bioprosthesis with valve area of 2.1 cm^2 (estimated by PHT), mean diastolic gradient between the left atrium and left ventricle of 10 mmHg and moderate mitral paraprosthetic regurgitation. There was a probable interatrial septal dissection forming a large cavity occupied by thrombus and projection of this thrombus to the mitral prosthesis, leading to a relative restriction of valve opening and increased gradient between the left atrium and the left ventricle. Mobile images were observed at the end of the thrombus, suggesting vegetations (infected thrombus?) (Figures 3 and 4). The tricuspid valve was normal and presented a mild reflux. PASP was estimated at 41 mmHg.

The patient was referred for surgery, where a large abscess in the mitral prosthesis ring and interatrial septum was seen. Bioprosthetic mitral valve was replaced by a metal prosthesis. Atriosseptoplasty was performed and the abscesses were drained.

The patient and evolved satisfactorily postoperatively and was discharged once clinically stable.

Discussion

Left atrial dissection is a separation of the left atrial endocardium from the myocardium or epicardium, extending from the mitral or tricuspid annulus to the interatrial septum or left atrial wall, creating a new cavity[1]. It is an extremely rare disease that occurs predominantly after mitral valve replacement[2,3]. Cardiac trauma, acute myocardial infarction, prosthesis endocarditis, vigorous cardiac massage, percutaneous coronary intervention, cannulation of the pulmonary vein[4], aortic valve surgeries, ventricular revascularization or repair of left ventricular aneurysm can also cause left atrial dissection. The incidence of LADs after mitral valve surgery is 0.84%. Only a few isolated cases have been published. As reviewed by Fukuhara et al. 1,[36] cases occurred after mitral valve surgery and only five cases with spontaneous dissection. Of these, two cases were related to amyloidosis and one, to mitral annulus calcification.

In almost all the cases reported, the cavity dissected had continuity with the left ventricle, which is one of the reasons for the association of LAD with ruptured LV[5].

It was observed that the majority (81%) of the dissections is in the left atrial posterior wall and only five cases (11.9%) were in the interatrial septum, which is similar to what happened to this patient, and only three cases in the anterior wall.

Transesophageal echocardiography is an important tool for accurate diagnosis and helps the cardiac surgeon properly handling the injury. That was performed on the first episode of infective endocarditis due to the severity of the clinical picture with immediate transfer of the patient to the operating room.

Keywords

Heart Atria/Surgery; Dissection; Endocarditis/Complications; Mitral Valve/Physiopathology.

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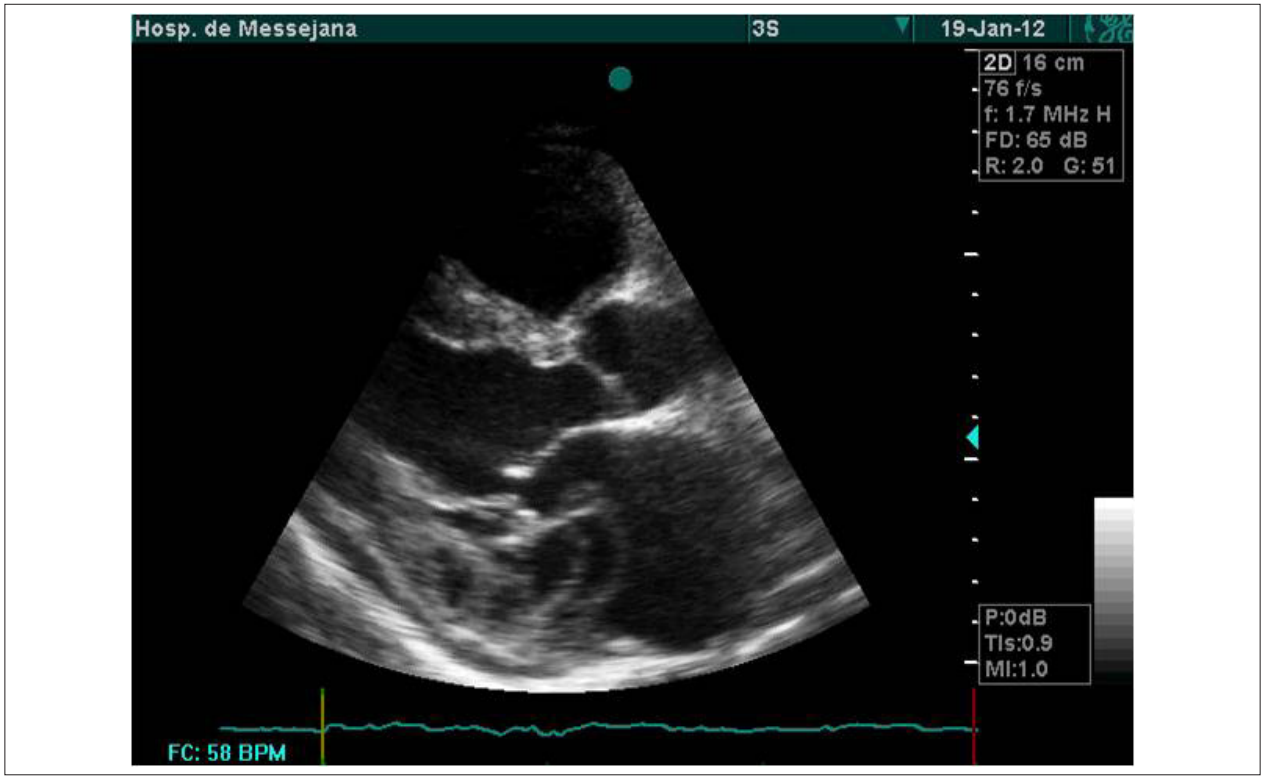

Figure 1 – *Left atrial dissection showing separation of the atrial wall layers, longitudinal parasternal view on transthoracic echocardiography.*

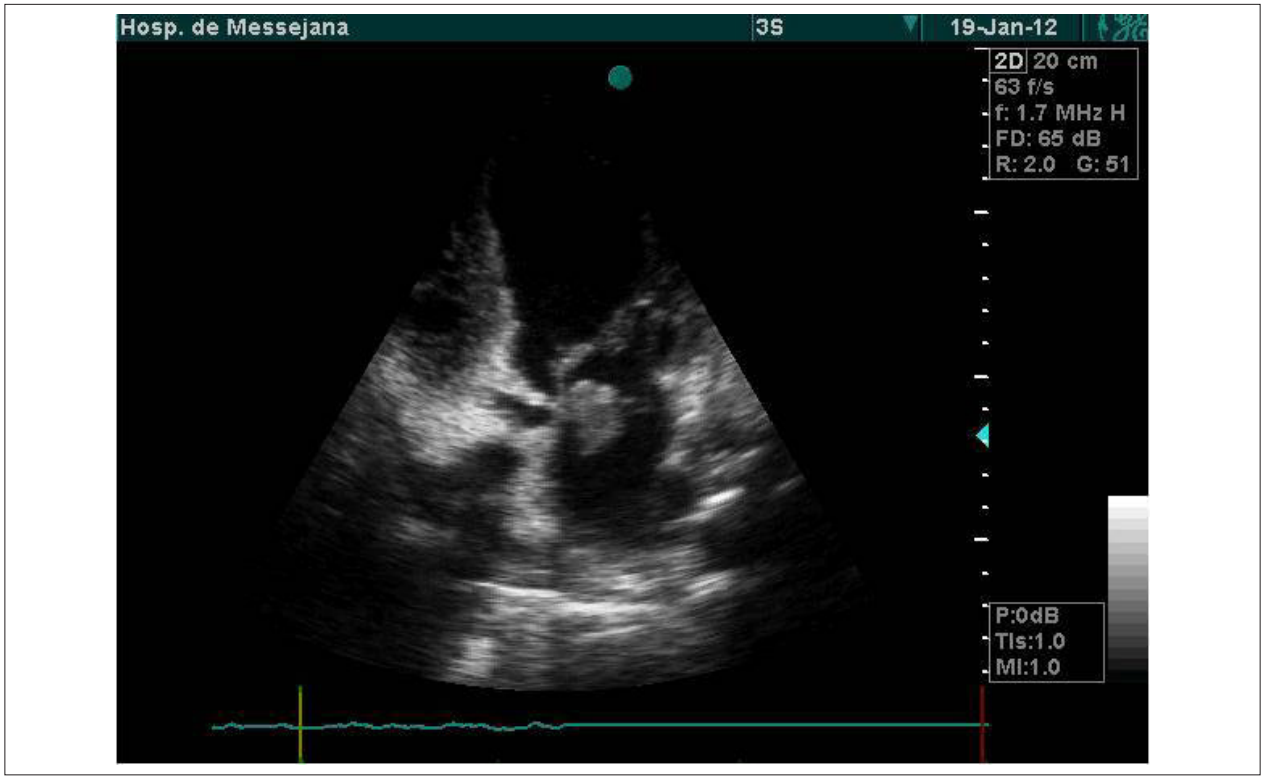

Figure 2 – *Apical five-chamber view with mobile image measuring about 6 x 7 mm near the left atrial septal wall suggesting vegetation.*

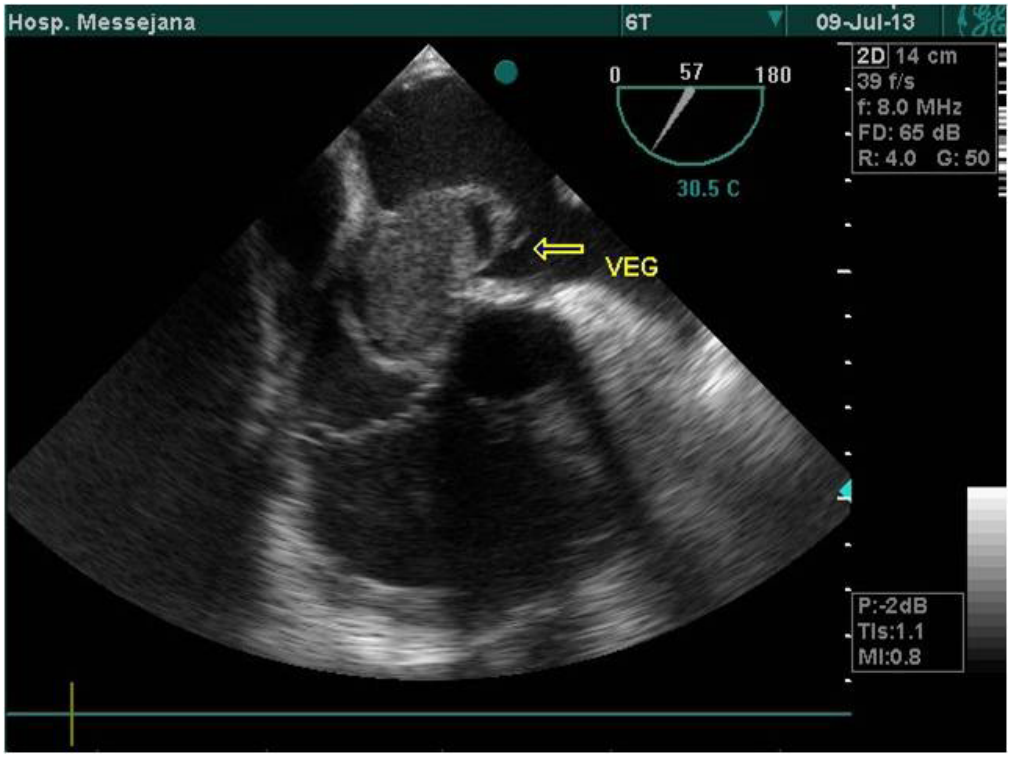

Figure 3 – *Presence of vegetation in the interatrial septum on transesophageal echocardiography.*
VEG: vegetation.

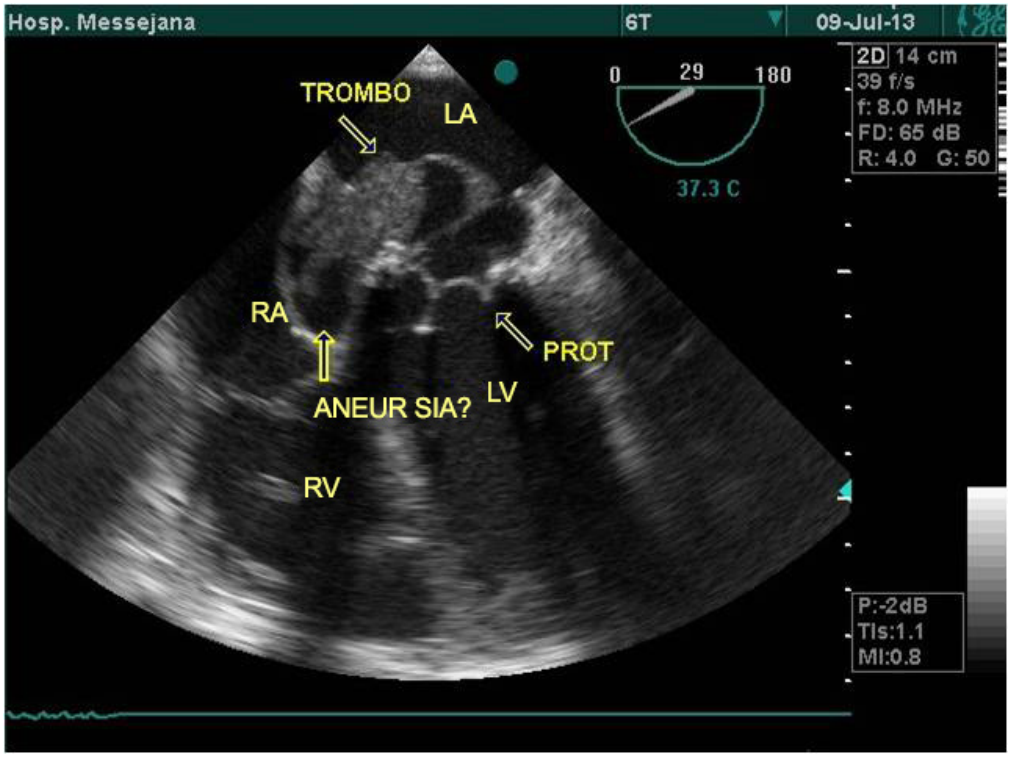

Figure 4 – *Presence of left atrial thrombus and interatrial septal aneurysm on transesophageal echocardiography.*
LA: left atrium; RA: right atrium; LV: left ventricle; RV: right ventricle; PROT: prosthesis; ANEUR SIA?: interatrial septal aneurysm.

According to the 2014 American consensus on valvular heart disease, intraoperative transesophageal echocardiography is a class I recommendation for valve surgery of infective endocarditis in order to evaluate the success of valve repair or replacement and detect complications such as infectious disease extension beyond the valve tissue[6].But not all cardiology centers in Brazil have one at the surgical center.

Most cases are treated surgically; but when discovered late in a hemodynamically stable patient, it can be followed up clinically[7]. Literature reviews report that the rate of surgical repair is around 79% in patients with LAD[1].

In 1998, Lorenzana et al[8] described a similar case in a 66-year-old patient with infective endocarditis of the native mitral valve by *Staphylococcus aureus*8. After 48 hours of treatment, the patient developed severe hypotension and respiratory failure due to acute pulmonary edema. The patient died preoperatively due to severe respiratory failure and shock.

This is a peculiar case because it presents left atrial septal wall dissection by native mitral valve endocarditis successfully surgically treated and disease recurrence by a new prosthetic mitral valve infection with a new approach and satisfactory progress.

This atypical picture demonstrates the importance of early performance of transthoracic echocardiography and transesophageal to diagnose severe diseases and properly plan the surgery.

Authors' contribution

Research creation and design: Falcão SNRS, Costa Filho JE; Data acquisition: Costa FF, Silva WA, Evangelista NL; Data analysis and interpretation: Cavalcante FFG, Silva WA, Evangelista NL; Statistical analysis: Cavalcante FFG, Silva WA, Evangelista NL; Manuscript drafting: Cavalcante FFG; Critical revision of the manuscript as for important intellectual content: Falcão SNRS, Costa Filho JE.

Potential Conflicts of Interest

No relevant potential conflicts of interest.

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Academic Association

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