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Ghostly intrusion on a frightful Halloween night: a case report of dual valve endocarditis

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Abstract

Multivalvular endocarditis (MVE) is an uncommon presentation and mostly involves the mitral and aortic valves. Here, we present a case of an MVE with an unusual and bizarre presentation on a Halloween night with a massive degree of valve destruction and right- and left-side involvement requiring emergent surgery.

A 51-year-old male patient with intravenous drug usage presented with anorexia, fever, and dyspnea, rapidly progressing to septic shock with multiorgan dysfunction. Initial blood cultures detected meticillin-sensitive *Staphylococcus aureus,* and antibiotic therapy was started. Transesophageal echocardiography revealed extensive valve destruction of both mitral and tricuspid valves, namely a mitral valve with large vegetation resembling a ghostly figure, causing severe mitral regurgitation. The patient was transferred for emergent mitral and tricuspid surgery.

The particularity of this case, besides the bizarre images, is that, as a drug user, there are specific considerations regarding surgical strategy and options in this scenario that we discussed here.

Key words: infective endocarditis, reconstructive valvular surgery, *Staphylococcus aureus*, embolic risk.

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Introduction

Infective endocarditis (IE) continues to be associated with high mortality and may present in a clinically dramatic manner [1]. Multivalvular endocarditis (MVE) is an uncommon presentation and mostly involves the mitral and aortic valves [1]. It is associated with a higher risk of congestive acute heart failure and septic shock [1]. Vegetations can acquire bizarre shapes with a high degree of valve destruction and often require emergent surgery.

Case Report

We present a case of a 51-year-old-male patient with schizoaffective disorder and cocaine and heroin abuse. He presented to the emergency room on Halloween night due to anorexia, fever, and progressive worsening of dyspnea in the past week. Physical examination showed a systolic murmur and diffuse bilateral crackles on lung auscultation. His clinical status rapidly progressed to septic shock with multiorgan dysfunction and severe dyspnea with the need for inotropic support and invasive mechanical ventilation. Initial blood cultures detected meticillin-sensitive *Staphylococcus aureus* (MSSA), and targeted antibiotic therapy was started.

Transesophageal echocardiography revealed a thickened mitral valve with a large, mobile vegetation (maximum 20 mm), resembling a ghostly figure (Figure 1A and B), attached to the posteromedial commissure and interatrial septum with perforation of the posterior leaflet (P2 and P3), causing severe mitral regurgitation (Figure 1D). An abscess in the posteromedial commissure with formation of a pseudoaneurysm was also documented (Figure 1B). The tricuspid valve was also thickened with a vegetation on the septal leaflet, causing moderate tricuspid regurgitation (Figure 1C).

The computed tomography scan showed extensive pulmonary (Figure 2A) and splenic (Figure 2B) infarctions.

The patient was transferred to a tertiary surgical center for mitral and tricuspid valve surgery due to extensive valve destruction. He required mitral valve A3 segment, posteromedial commissure, and P3 resection; debridement of a posteroinferior left ventricular free wall abscess (extending to the coronary sinus); and tricuspid anteroseptal commissure, along with anterior and septal leaflet resection.

Reconstructive surgery consisted of closing the left ventricular abscess with autologous pericardium, replacing the excised mitral valve scallops with an autologous pericardial flap, and performing mitral valve annuloplasty with a Physio I annuloplasty ring (Edwards Lifesciences, Irvine, CA, USA) (Figure 3). This was followed by replacing the tricuspid excised leaflet segments with an autologous pericardial flap, securing them with two polytetrafluoroethylene cords anchored to the free edge of the neo-anterior and

commissural leaflets, and performing annuloplasty with a Contour 3D Ring (Minneapolis, MN, USA).

Transthoracic postoperative echocardiography revealed good biventricular function and normal tricuspid and mitral valve function. MSSA was isolated from intraoperative valve tissue.

The patient was hospitalized for 44 days with a postoperative period complicated by mediastinitis and nosocomial pneumonia, treated conservatively with targeted antibiotic therapy. He was discharged for infectious disease, cardiology, and rehabilitation consultations.

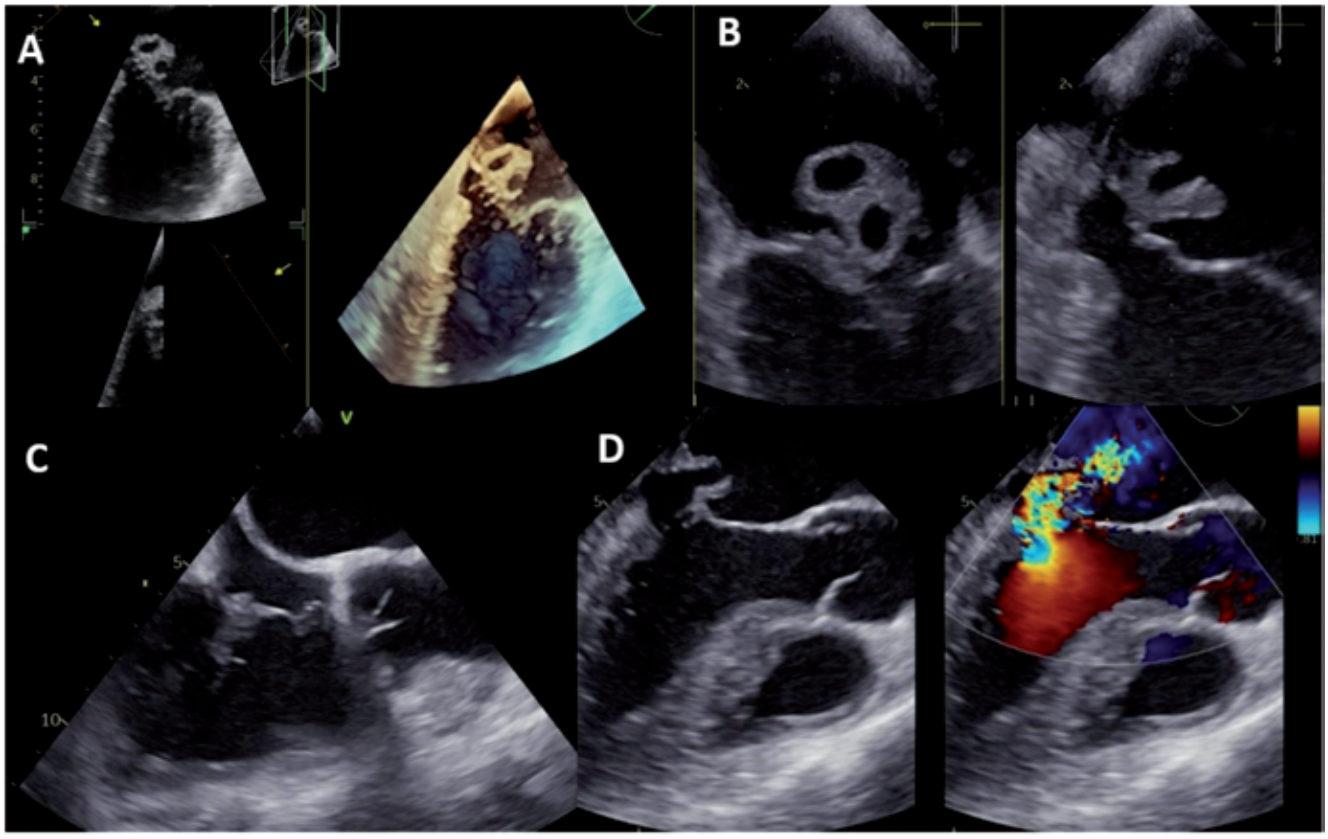

Figure 1. A,B) Transthoracic echocardiogram images showing a thickened mitral valve with a large vegetation resembling a ghostly figure; C) tricuspid valve thickened with a vegetation on the septal leaflet; D) vegetation depending on the posteromedial commissure and interatrial septum with perforation of the posterior leaflet.

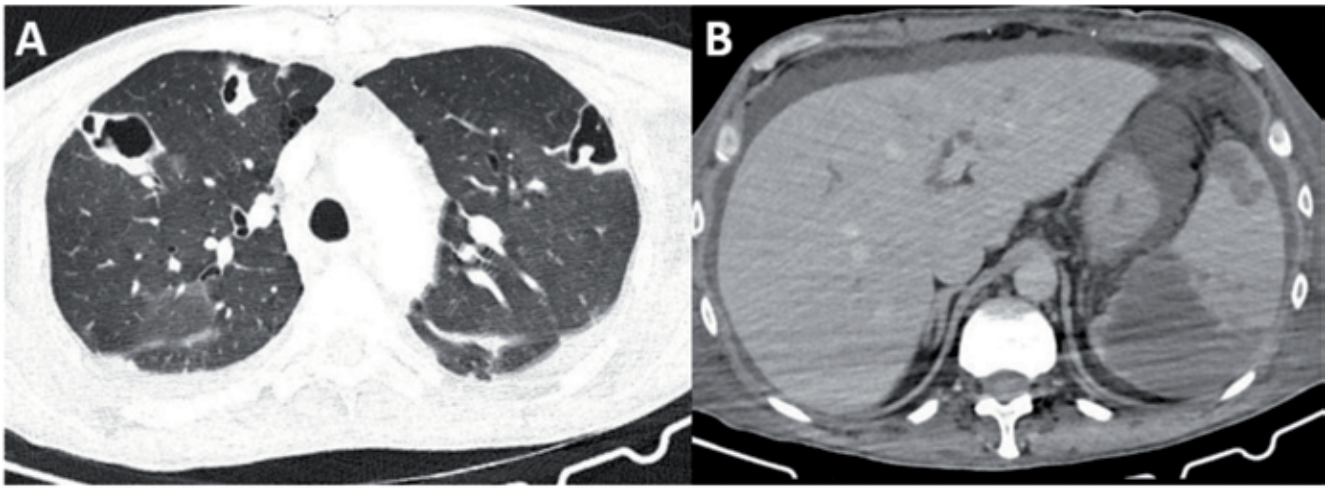

Figure 2. Computed tomography scan images showing multiple pulmonary (A) and splenic (B) embolic infarctions.

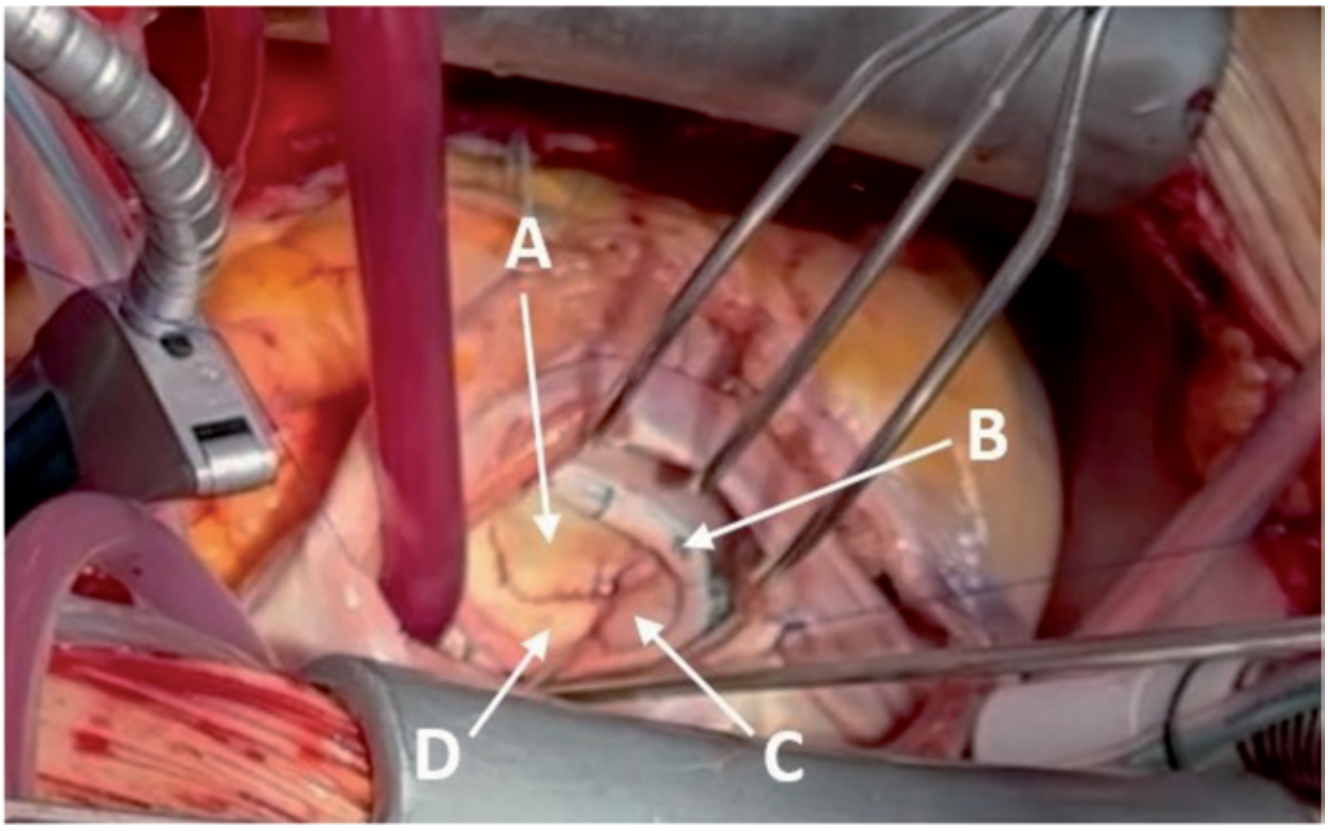

Figure 3. Reconstructive surgery by replacing the excised mitral valve scallops with an autologous pericardial flap and performing mitral valve annuloplasty with a Physio I annuloplasty ring (Carpentier-Edwards®). A) Anterior mitral valve leaflet; B) annuloplasty ring; C) autologous pericardial flap; D) posterior mitral valve leaflet.

Discussion

Half of the cases of IE are treated surgically due to important complications [2]. Although this option entails a higher operative risk in the acute phase of the disease, it can diminish the risk of heart failure progression, irreversible structural damage, and systemic embolism [3].

In this case, the size of vegetation, the embolic events related to both valves' destruction, and the refractory shock and heart failure made it imperative to move on to emergent surgery.

In patients with active intravenous (IV) drug abuse, reinfection and mortality rates remain a major challenge [4]. This contributes to the dilemma associated with the best surgical approach, as valve replacement poses a heightened risk of recurrence unless absolute abstinence is achieved [4]. Being so, as an IV drug user, there are specific considerations regarding surgical strategy and options. The surgical strategy entails extensive debridement of infected tissues, structural reconstruction, and valve repair if possible [5].

Conclusions

This case reflects the severity and complexity of a bilateral MVE with multiple right- and left-sided septic embolization caused by MSSA in an IV drug user with massive native valve destruction resembling a ghostly figure on a Halloween night.

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Patient consent for publication: the patient gave his consent to use his personal data for the publication of this case report and any accompanying images.

Availability of data and materials: all data and materials are available from the corresponding author upon request.