Infective endocarditis nightmare: A bold solution for a devastating scenario

Inês Oliveira[1], Daniel Seabra de Carvalho[2], Ana Neto[2], Nuno Ferreira[3], Sandra Amorim[4], Pinheiro Torres[5], João Azevedo[1], Paula Pinto[1], and Aurora Andrade[1]

[1]Centro Hospitalar Tâmega e Sousa EPE
[2]Centro Hospitalar Tamega e Sousa EPE
[3]Centro Hospitalar de Vila Nova de Gaia Espinho EPE
[4]Centro Hospitalar de Sao Joao
[5]Centro Hospitalar de São João EPE

February 20, 2021

Abstract

Infective endocarditis still has significant morbimortality, despite diagnostic and therapeutic improvements. We describe a case of a 67-year-old man with recurrent prosthetic aortic valve infective endocarditis complicated by massive local tissue damage, making valve replacement unfeasible. Although rarely performed in this setting, heart transplantation was a needed salvage strategy, highlighting the need to make bold decisions for complex clinical scenarios.

Title Page

Infective endocarditis nightmare: A bold solution for a devastating scenario

Inês Oliveira, MD[1]; Daniel Seabra, MD[2]; Ana Neto, MD[1]; Nuno Ferreira, MD[3]; Sandra Amorim, MD[4]; Pinheiro Torres, MD[5]; João Azevedo, MD[1]; Paula Pinto, MD[1]; Aurora Andrade, MD[1]

[1] Serviço de Cardiologia, Centro Hospitalar Tâmega e Sousa, Penafiel, Portugal

[2] Serviço de Cardiologia, Unidade Local de Saúde de Matosinhos – Hospital Pedro Hispano, Matosinhos, Portugal

[3] Serviço de Cardiologia, Centro Hospitalar Vila Nova de Gaia/Espinho, Vila Nova de Gaia, Portugal

[4] Serviço de Cardiologia, Centro Hospitalar e Universitário São João, Porto, Portugal

[5] Serviço de Cirurgia Cardiotorácica, Centro Hospitalar e Universitário São João, Porto, Portugal

Short title: Heart transplant in infective endocarditis

Corresponding Author Information

Inês Oliveira

Cardiology Department, Centro Hospitalar Tâmega e Sousa, Avenida do Hospital Padre Américo 210, 4560-136, Guilhufe, Penafiel, Portugal.

Tel.: +351255714000. E-mail: ines.spoliveira@gmail.com

Funding: None.

Conflicts of interest: None.

Abstract

Infective endocarditis still has significant morbimortality, despite diagnostic and therapeutic improvements. We describe a case of a 67-year-old man with recurrent prosthetic aortic valve infective endocarditis complicated by massive local tissue damage, making valve replacement unfeasible. Although rarely performed in this setting, heart transplantation was a needed salvage strategy, highlighting the need to make bold decisions for complex clinical scenarios.

Keywords

Infective Endocarditis; Heart Transplantation; Prosthetic Valve Infective Endocarditis; Staphylococcus aureus Infective Endocarditis

Introduction

Infective endocarditis (IE) remains a devastating disease with high morbimortality rates.[1,2] Hazardous decisions are often necessary, underscoring the challenging management of these patients.[1,2,3]

We report a case of a 67-year-old male patient with recurrent prosthetic valve IE (PVIE), with massive local tissue damage, making surgery unfeasible. Although rarely performed in this setting, heart transplant (HT) was the only possibility, as a salvage strategy.

Case description

A 67-year-old man with aortic bioprosthesis, implanted in 2012 in the setting of native aortic valve (AoV) IE, underwent a redo surgery - Bentall procedure with new AoV bioprothesis - after early PVIE in 2013. No known risk factors or drug abuse.

In 2017, he was admitted to hospital with fever with one-week evolution-time. Physical examination was unremarkable except for fever and tachycardia. Blood analysis showed elevated systemic inflammatory markers. He was hospitalized for further study. Transthoracic (TTE) and transesophageal echocardiography (TEE) revealed the presence of thin filiform vegetations in the right coronary cusp, with no local complications. No signs of systemic embolization. The diagnosis of PVIE was made and empiric antibiotic therapy was started, later directed to methicillin-sensitive Staphylococcus aureus (SA) identified in blood cultures. The patient remained febrile and developed complete atrio-ventricular (AV) block. A transvenous temporary pacemaker was implanted and TEE was repeated which disclosed a perivalvular abscess involving the anterior the AoV ring (Figure 1A, B, C). Serial echocardiographic assessments showed abscess expansion involving the entire prosthetic ring, pseudoaneurysm formation and mild paravalvular regurgitation (Figure 1D, E, F). Cardiac computed tomography depicted the massive pseudoaneurysm of the aortic root (AoR) with bilateral communication with the left ventricle (LV) (Figure 2).

The case was addressed in Heart Team: due to massive destruction of cardiac structures, he was ineligible for AoV replacement and was proposed for HT. He recovered from AV block, with no signs of heart failure or systemic embolization. Repeated sets of blood cultures were sterile after 6 weeks of antibiotic therapy. He was discharged home while on waiting list for HT. Serial echocardiograms were performed, which depicted preserved LV function, mild aortic regurgitation and the AoR pseudoaneurysm with similar features over time. After eight months of outpatient follow-up, he was successfully transplanted and had an uneventful postoperative course. Despite the dreadful presentation, he remains asymptomatic 3 years after HT.

Discussion

IE remains a deadly disease imposing significant management challenges.[1,2] Its epidemiologic profile has changed with an increasing incidence of SA and the generalized implantation of prosthetic material, conditions often associated with complicated clinical course.[3]

In our case, SA was the isolated pathogen, proving its aggressive profile with the development of multiple perivalvular complications such as abscess formation, fistulation, pseudoaneurysm and AV conduction disturbances. Interestingly, septic embolization, which is a common finding in SA IE, was not documented.

Ideal surgical timing is a rather controversial issue due to the risks related to undergoing surgery with an on-going infectious process.[3] HT is the utmost controversial topic, due to the need for immunossupression.[4,5] Although guidelines support its use in extreme cases, there is little experience on the field and recommendations are scarce, being rarely performed in IE.[1,4,5]

The patient had recurrent PVIE with major cardiac tissue destruction, making surgery unfeasible. A multidisciplinary approach was essential, considering the high-risk strategy proposed. HT was life-saving, performed after a surprisingly uneventful course of 8 waiting months, despite severe cardiac an vascular damage.

This interesting course of events and post-transplant favorable evolution highlights the need to carefully select patients for HT as donor shortage is common, imposing long waiting timing for high-risk patients process.[5] In the case reported, the apparently resolved systemic infectious process reflected by normalization of inflammatory markers and sterilization of blood cultures probably played a role in favorable post-surgical clinical evolution.

In conclusion, IE is a defying disease associated with potentially fatal complications. This case illustrates the paradigm of a massive perivalvular destruction in IE deemed as "untreatable". HT in this setting highlights the need to make bold decisions in challenging clinical scenarios in order to avoid fatal outcomes.

References

1. Habib G, Lancellotti P, Antunes M, et al. 2015 ESC Guidelines for the management of infective endocarditis. *European Heart Journa* l. 2015;36(44):3075-3123.

2. Baddour L, Wilson W, Bayer A, et al. Infective endocarditis in adults: Diagnosis, antimicrobial therapy, and management of complications: A scientific statement for healthcare professionals from the American Heart Association. *Circulation* . 2015;132(15):1435-1486.

3. Cahill T, Baddour L, Habib G, et al. Challenges in Infective Endocarditis. *Journal of the American College of Cardiology* . 2017;69(3):325-344.

4. Durante-Mangoni E, Casillo R, Pinto D, et al. Heart transplantation during active infective endocarditis: Case report and review of the literature. T*ransplantation Proceeding* . 2011;43(1):304-306.

5. Murphy K, Vikram H. Heart transplantation for infective endocarditis: Viable option for a limited few?. *Transplant Infectious Disease* . 2019;21(1):0-3.