

Culture-negative endocarditis in a patient with Marfan syndrome and a mechanical mitral valve: diagnostic and therapeutic challenges

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Introduction: Infective endocarditis (IE) in a patient with Marfan syndrome and a mechanical mitral valve prosthesis presents both diagnostic and therapeutic challenges, particularly in cases of culture-negative endocarditis. Timely recognition and empiric antimicrobial therapy are essential for achieving a favorable clinical outcome.¹⁻³

Case report: 52-year-old male with a known history of Marfan syndrome, previous mechanical mitral valve replacement, Valsalva aortic graft implantation and radiofrequency ablation of arrhythmogenic foci in the left atrium, was admitted due to a one-month history of low-grade fever, rhinorrhea and worsening dyspnea. The onset of symptoms occurred six months postoperatively. Clinical examination, laboratory tests, serological analyses and imaging studies failed to identify focus of infection and all obtained blood culture sets (including HACEK organisms) remained sterile. Transthoracic echocardiography (TTE) did not reveal any vegetations or intracavitary masses; however, transesophageal echocardiography (TEE) demonstrated a hyperechogenic lesion measuring 0.4 × 0.4 cm on the non-coronary cusp of the aortic valve. Positron emission tomography-computed tomography (PET-CT) revealed increased radiotracer uptake in the ascending aorta, accompanied by mild morphological irregularity of the valve, consistent with an active inflammatory process. Based on the 2023 Duke criteria, a diagnosis of definitive infective endocarditis was established. Empirical combination therapy with meropenem, vancomycin and rifampicin were initiated and continued for 6 weeks, after which the patient became afebrile and clinically stable. He was subsequently referred for outpatient cardiology follow-up.

Conclusion: Despite advances in diagnostic modalities, culture-negative endocarditis remains a significant clinical challenge due to the difficulty in differentiating infectious from sterile inflammatory lesions. In this context, PET-CT has emerged as a valuable adjunctive imaging technique, aiding in the confirmation of infection in diagnostically ambiguous cases. This case highlights the complexity of diagnosing culture-negative endocarditis in a patient with Marfan syndrome and multiple prior cardiovascular surgeries. In the absence of microbiological confirmation, multimodal imaging (TTE, TEE, PET-CT) combined with timely empiric antimicrobial therapy remains crucial for successful management and prevention of potential complications associated with infective endocarditis.

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LITERATURE

1. Baddour LM, Wilson WR, Bayer AS, Fowler VG Jr, Tleyjeh IM, Rybak MJ, et al; American Heart Association Committee on Rheumatic Fever, Endocarditis, and Kawasaki Disease of the Council on Cardiovascular Disease in the Young, Council on Clinical Cardiology, Council on Cardiovascular Surgery and Anesthesia, and Stroke Council. Infective Endocarditis in Adults: Diagnosis, Antimicrobial Therapy, and Management of Complications: A Scientific Statement for Healthcare Professionals From the American Heart Association. *Circulation.* 2015 Oct 13;132(15):1435-86. <https://doi.org/10.1161/CIR.0000000000000296>
2. Delgado V, Ajmone Marsan N, de Waha S, Bonaros N, Brida M, Burri H, et al; ESC Scientific Document Group. 2023 ESC Guidelines for the management of endocarditis. *Eur Heart J.* 2023 Oct 14;44(39):3948-4042. <https://doi.org/10.1093/eurheartj/ehad193>
3. Fournier PE, Thuny F, Richet H, Lepidi H, Casalta JP, Arzouni JP, et al. Comprehensive diagnostic strategy for blood culture-negative endocarditis: a prospective study of 819 new cases. *Clin Infect Dis.* 2010 Jul 15;51(2):131-40. <https://doi.org/10.1086/653675>