

***Staphylococcus lugdunensis* endocarditis causing prosthetic aortic valve dysfunction after TAVR**

Disfunción protésica aórtica debido a endocarditis por *Staphylococcus lugdunensis* posterior a TAVI

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A 78-year-old male complained of persistent fever, malaise, and chills for several days. In addition to hypertension, he had severe degenerative aortic stenosis that required transcatheter aortic valve replacement (TAVR) 3 months prior due to his advanced age (Evolut R 23 mm, Medtronic, Minneapolis, Minnesota). The procedure was uncomplicated, and the control transthoracic echocardiogram (TEE) showed a peak velocity of 1.8 m/s, peak and mean gradients of 13 and 7 mmHg, respectively, across the valve, and no perivalvular regurgitation. The examination was relevant due to a temperature of 37.8°C and a grade 4 systolic ejection murmur in the aortic area. Laboratory studies revealed high levels of leukocytes (11,500 mm³) and procalcitonin (10 ng/mL). Despite the non-diagnostic imaging studies for infection foci, pair of blood cultures was obtained, and subsequent intravenous antibiotic was initiated based on suspicion of infective endocarditis (IE). TEE revealed significant structural valve

deterioration (Fig. 1), and a single photon emission computed tomography-computed tomography scan revealed focal uptake in the prosthetic aortic valve area (Fig. 2A). The patient's blood cultures were positive for multisensitive *Staphylococcus lugdunensis*; however, despite guided antibiotic treatment, he persisted with fever and positive blood culture after 12 days. The patient was taken for urgent surgery, and he underwent TAVR valve explantation followed by surgical aortic valve replacement (Fig. 2B); antibiotics were continued, and blood cultures were negative postoperatively. The post-operative hospital course was uneventful, and the patient was discharged symptom-free.

Even though the incidence of IE after TAVR is rare, it is expected to increase exponentially due to the growing number of procedures and their expansion into younger patients¹. The in-hospital mortality rate associated with TAVR-IE is 36%². The risk of IE is 6 times higher in the early peri-TAVR period

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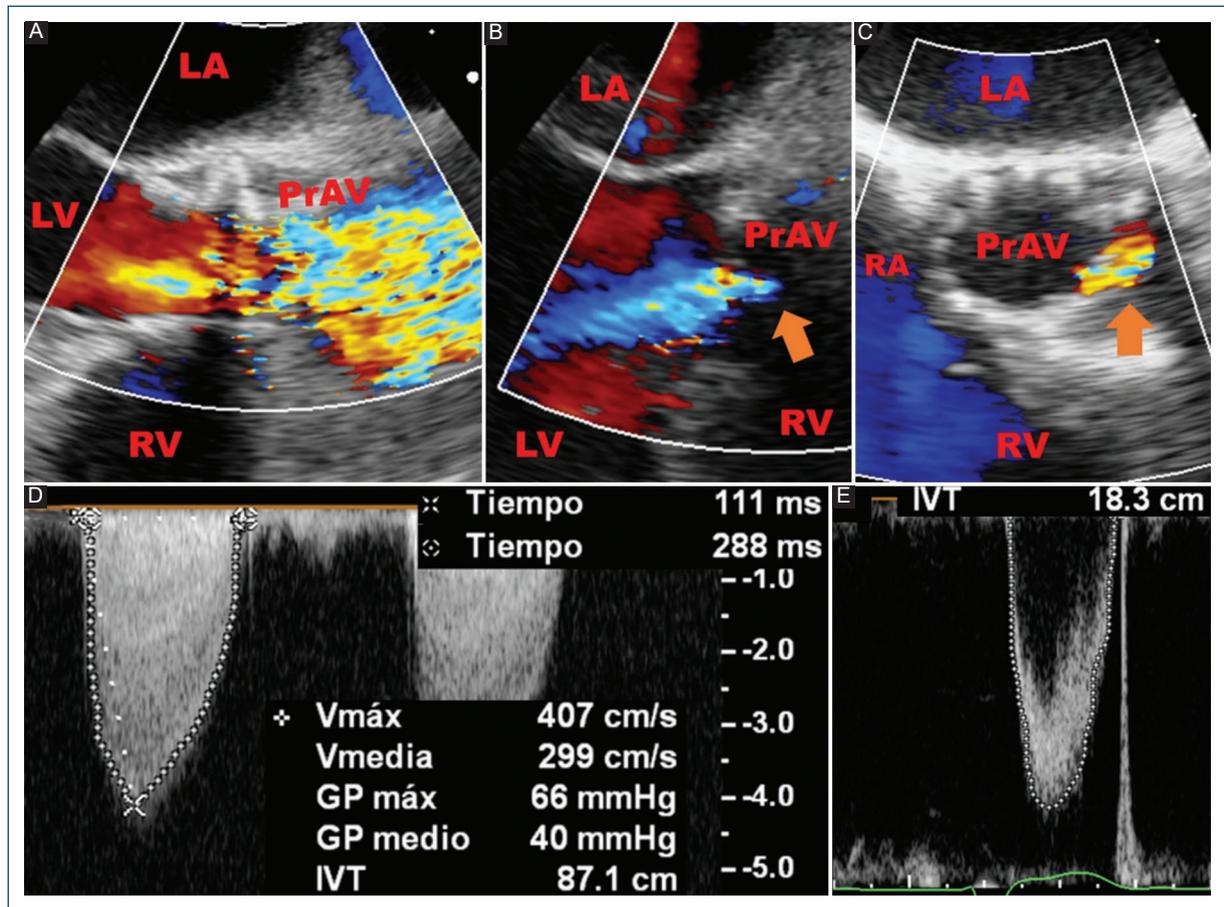


Figure 1. Transesophageal echocardiography: Prosthetic aortic valve with thickened transcatheter aortic valve replacement leaflets with abnormal mobility, valvular stenosis, and new occurrence of moderate regurgitation (orange arrow). Parameters: AT 111 ms, LVET 288 ms. AT/LVET ratio 0.38, peak velocity 4.07 m/s, peak gradient 66 mmHg, mean gradient 40 mmHg, VTI_{LVOT} 18.3 cm, VTI_{PrAV} 87.1 cm, DVI 0.2 (baseline 0.58), EOA 0.6 cm² (baseline 1.32 cm²). **A:** 2D image with color Doppler, mid-esophageal view at 135° (long axis). **B:** 2D image with color Doppler, mid-esophageal view at 135° (long axis). **C:** 2D image with color Doppler, mid-esophageal view at 45°. **D:** continuous-wave Doppler across prosthetic aortic valve. **E:** pulse-wave Doppler in the left ventricle outflow tract. AT: acceleration time; EOA: effective orifice area; DVI: Doppler velocity index; LA: left atrium; LV: left ventricle; LVET: left ventricular ejection time; RA: right atrium; RV: right ventricle; PrAV: prosthetic aortic valve; VTI_{LVOT} : left ventricular outflow tract velocity-time integral; VTI_{PrAV} : prosthetic aortic valve velocity-time integral.

(< 100 days), with early IE (< 1 year) representing the majority of cases of TAVR-IE (64%)¹. Enterococci, *staphylococcus aureus*, coagulase-negative staphylococci, and streptococci are the most common causative microorganisms^{1,2}. Even though more than half of the TAVR-IE cases are classified as health-care-associated, the source of the infection remains unknown in almost 70% of cases despite thorough evaluations¹. Despite its rarity in cases of TAVR-IE, *S. lugdunensis* is a highly virulent pathogen that can grow on both bioprosthetic materials and native tissues due to its ability to produce and adhere to biofilms; in cases of TAVR-IE, however, remains unclear how patients

acquired *S. lugdunensis* bacteremia beforehand^{1,2}. The diagnosis of TAVR-IE can be challenging since over 40% of echocardiographic findings are inconclusive; hence, a multimodality imaging approach is essential in these cases^{1,2}. As conservative management is often inadequate, the valve must be replaced surgically; in uncomplicated cases with a sensitive organism, surgery should be considered if complications arise². The indications for surgery in this population are usually individualized according to the local experience, surgical risk, concomitant clinical conditions, and anatomical factors affecting surgery performance¹.

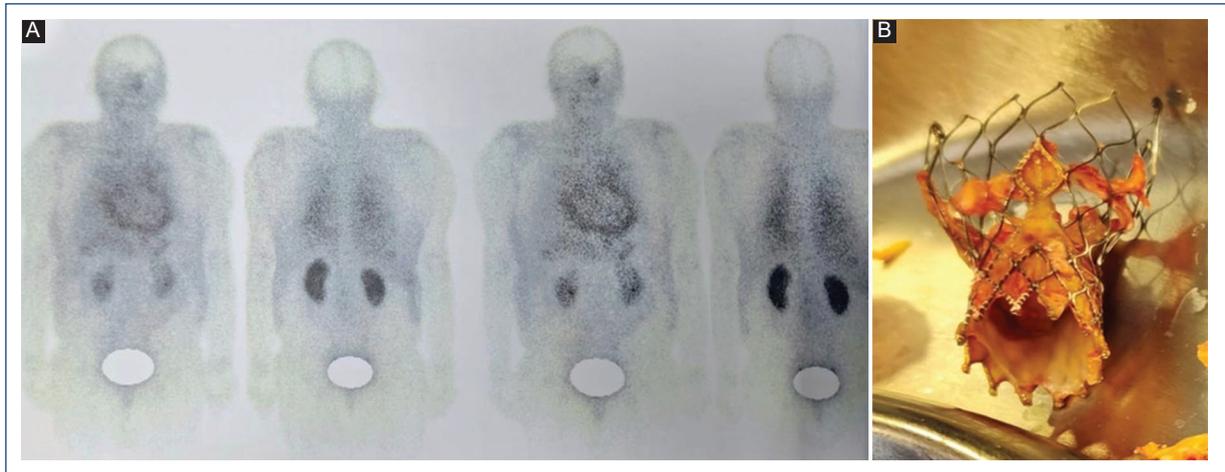


Figure 2. **A:** technetium-99m-ubiquicidin 29-41 SPECT-CT scan: focal uptake in the prosthetic aortic valve area and pericardium. **B:** transcatheter aortic valve replacement endoprosthesis extracted with fibrin and signs of edema on the prosthetic leaflets and skirt. SPECT-CT: single photon emission computed tomography-computed tomography.

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Conflicts of interest

The authors declare no conflicts of interest.

Ethical considerations

Protection of humans and animals. The authors declare that no experiments involving humans or animals were conducted for this research.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's

confidentiality protocols, obtained informed consent from patients, and received approval from the Ethics Committee. The SAGER guidelines were followed according to the nature of the study.

Declaration on the use of artificial intelligence. The authors declare that no generative artificial intelligence was used in the writing of this manuscript.

References

1. Del Val D, Panagides V, Mestres CA, Miró JM, Rodés-Cabau J. Infective endocarditis after transcatheter aortic valve replacement: JACC state-of-the-art review. *J Am Coll Cardiol.* 2023;81:394-412.
2. Singhal P, Kanjanauthai S, Kwan W. Recurrent multivalvular *Staphylococcus lugdunensis* endocarditis causing complete heart block after TAVR. *Case Rep Cardiol.* 2021;2021:5334088.