

Multivalvular endocarditis

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A 32-year-old man was admitted to our department due to heart failure (New York Heart Association [NYHA] class IV). He had a history of intravenous drug abuse, recurrent pneumonia, elevated body temperature (37.5°C), fatigue, and kidney failure. Physical examination revealed tachycardia (heart rate, 110 bpm), peripheral edema, and hepatomegaly. Laboratory tests showed anemia (hemoglobin, 9.6 g/dl), leukocytosis (white blood cell count, 13 000/μl), and elevated levels of creatinine (6.2 mg/dl), C-reactive protein (67 mg/l), and procalcitonin (1.8 ng/ml). The tests for hepatitis C virus, hepatitis B virus, and HIV were negative. Transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) showed reduced left ventricular ejection fraction (LVEF, 35%), a dilated left ventricle (end-diastolic volume [EDV], 207 ml), severe mitral and tricuspid regurgitation, mild pulmonary regurgitation, and vegetations on all 4 valves (tricuspid valve >30 mm; mitral valve >15 mm; pulmonary valve, 10 mm; and aortic valve, 5 mm) (FIGURE 1A–1D). Blood culture revealed methicillin-resistant *Staphylococcus epidermidis*, and antibiotic therapy was administered immediately (intravenous vancomycin and amikacin).

Initially, the patient was considered ineligible for urgent surgery by a cardiac surgeon due to high operative risk (European System for Cardiac Operative Risk Evaluation II [EuroSCORE II], 18.2%). However, the antibiotic therapy was continued for 6 weeks, and the patient's condition improved (NYHA class II; LVEF, 45%; C-reactive protein <5 mg/l; negative blood culture test). On control TEE (FIGURE 1D and 1E), severe mitral and tricuspid regurgitations and vegetations on the mitral and tricuspid valves (10 mm) were still observed, but no vegetations on the aortic and pulmonary valves were detected. On second consultation with the cardiac surgeon, the patient was referred for surgery (EuroSCORE II, 7.41%). The cardiac surgery team performed mitral (mechanical prosthesis: Sorin Bicarbon

prosthesis, 29 mm) and tricuspid (biological prosthesis: Hancock II, 29 mm) valve replacements (FIGURE 1F). Due to third-degree atrioventricular block, a cardiostimulator was immediately implanted. No pathogens were found in the excised tissues. The patient was discharged 10 days after the surgery in good condition. A follow-up TTE at 3 months showed normal function of the valve prostheses with no paravalvular leakage and a mildly reduced LVEF of 48% (EDV, 135 ml).

We presented a unique case of four-valve endocarditis in a former drug addict. The occurrence of endocarditis in this population is common (1.5–20 per 1000 addicts per year), but rarely occurs in more than one valve (5%–10% in injection drug users).¹

According to Kim et al² and Yao et al,³ multivalvular endocarditis in the general population is rare, reaching 18% of patients (14 of 88) included in the analysis. The risk factors for multivalvular endocarditis have not been clearly identified, and these patients may require a different approach, as they have a higher mortality risk and a worse prognosis than the general population.^{2,4} In our case, the strategy of delayed surgery proved effective. Guidelines do not address the problem of multivalvular endocarditis directly. Therefore, further research is needed to effectively treat these complex patients.

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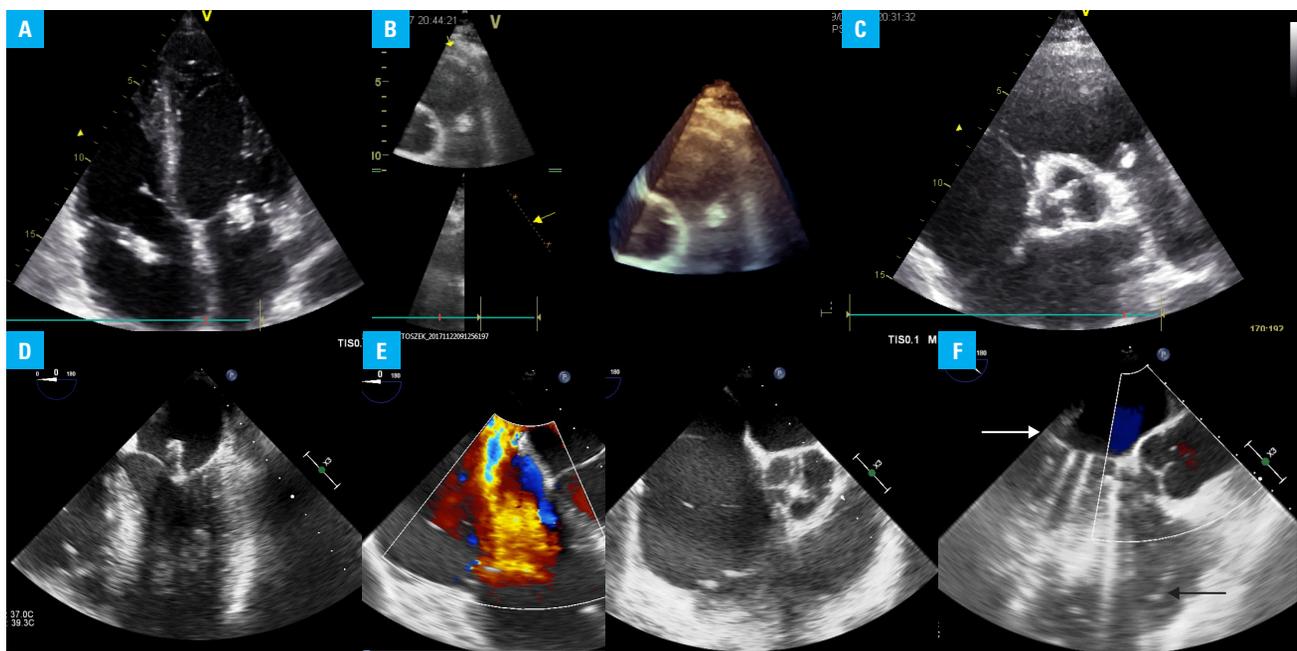


FIGURE 1 **A** – transthoracic echocardiography (TTE), 4-chamber view: vegetations on the mitral and tricuspid valves; **B** – 3-dimensional TTE, short-axis view: vegetation on the pulmonary valve; **C** – TTE, short-axis view: vegetations on the pulmonary and aortic valves; **D** – transesophageal echocardiography (TEE), midesophageal 4-chamber view (0°): vegetation on the mitral valve, after antibiotic therapy; **E** – TEE, midesophageal 4-chamber view (0°): tricuspid valve after antibiotic therapy and residual severe tricuspid regurgitation; **F** – TEE, midesophageal 3-chamber view (130°), after surgery (mitral and tricuspid valve replacement): mechanical prosthesis of the mitral valve and bioprosthesis of the tricuspid valve (arrows)

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