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A 32-year-old male was admitted to our department due to heart failure (New York Heart Association [NYHA] IV). The patient had a history of intravenous drug abuse, recurrent pneumonia, fever (37.5°C), fatigue, and kidney failure. Physical examination revealed tachycardia (heart rate: 110 beats/min), peripheral edema, and hepatomegaly. Laboratory results showed that there was anemia (hemoglobin: 9.6 g/dl), elevated creatinine (6.2 mg/dl), leucocytemia (13000 white blood cells [WBC]/ul), elevated C-reactive protein (67 mg/dl), and elevated procalcitonin (1.8 ng/ml). Tests for hepatitis C virus (HCV), hepatitis B virus (HBV), and human immunodeficiency virus (HIV) were negative. Transthoracic echocardiography (TTE) and transesophageal echocardiography (TEE) showed impaired left ventricular ejection fraction (LVEF: 35%), dilated left ventricle (end-diastolic volume [EDV]: 207 ml), severe mitral and tricuspid regurgitation, mild pulmonary regurgitation and vegetations on all four valves (tricuspid valve [>30 mm], mitral valve [>15 mm], pulmonary valve [10 mm], and aortic valve [5 mm]) (Figure 1 A-D). Blood culture revealed methicillin-resistant Staphylococcus epidermidis, and antibiotic therapy was administered immediately (vancomycin i.v. and amikacin i.v.). Initially, the patient was disqualified from urgent surgery by a cardiac surgeon due to high risk (EuroSCORE II: 18.2%). However, antibiotic therapy was continued for 6 weeks, and the patient’s condition improved (NYHA II, LVEF: 45%. C-reactive protein: <5 mg/dl, negative blood culture test). In the control TEE (Figures 1D,1E), severe mitral and tricuspid regurgitations and vegetations on mitral and tricuspid valves (10 mm) remained; no vegetations on the aortic and pulmonary valve were detected. Upon a second consultation with a cardiac surgeon, the patient qualified (EuroSCORE II: 7.41%) for surgery. 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 a 3rd degree atrioventricular (AV) block, a cardiomotor was immediately implanted. No pathogens were found in the tissues removed during the
surgery. The patient was discharged 10 days post-surgery in good condition. The 3-month follow-up TTE showed normally functioning valve prostheses with no paravalvular leakage and a mildly reduced LVEF of 48% (EDV: 135 ml).

Here, we presented a unique case of four-valve endocarditis in an ex-drug-addicted patient. 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 N. et al. and Yao F. et al., the incidence of multivalvular endocarditis in the general population is rare, occurring in up to 18% (14 out of 88) of patients included in the analysis[2,4]. The risk factors of multivalvular endocarditis have not been clearly identified, and these patients may require a different approach, having a higher mortality risk, and a worse prognosis than the general population [2,3]. In our case, the strategy of adjourned surgery worked very well. The guidelines do not address the problem of multivalvular endocarditis directly. Therefore, further research is needed to effectively treat these complicated patients.
Figure 1.

A. TTE - 4 chamber view: Vegetations on mitral valve and tricuspid valve.

B. TTE - Short axis view_3D: Vegetation on the pulmonary valve.

C. TTE - Short axis view: Vegetations on the pulmonary valve and aortic valve.

D. TEE - ME 4 chamber view (0 deg.): Vegetation on the mitral valve - after antibiotic therapy.

E. TEE - ME 4 chamber view (0 deg.): Tricuspid valve after antibiotic therapy and residual severe tricuspid regurgitation.

F. TEE - ME 3 chamber view (130 deg.): after surgery - MVR/TVR: mechanical prosthesis of the mitral valve and bioprosthesis of the tricuspid valve (arrows).

References

