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The devil is in the details: from STEMI to LVAD with sepsis and endocarditis in the meantime

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Introduction: Although temporary and durable mechanical circulatory support devices are lifesaving, their benefits should always be weighed against the substantial risk of infectious and thromboembolic complications.[1-3]

Case report: 64-year-old patient was transferred to our institution after anteroseptal STEMI was diagnosed. Upon arrival at the catheterization laboratory, the patient went into cardiac arrest. The initial rhythm was PEA, and after short-term CPR, ROSC was achieved. In the ECG a complete AV node block with a ventricular rate of 30 bmp. Due to complete AV node block, a temporary pacemaker was placed after which coronary angiography was performed. It showed diffusely narrowed LM, occluded lad from the ostium, ostial calcified RIM with intermediate stenosis and CTO RCA. Due to hemodynamic instability of the patient, a microaxial flow pump was. An intervention was performed on the LM/LAD. Vasoinotropic support with dobutamine and noradrenaline was continued post-procedurally. Four days after the procedure, patient went into septic shock. Empirical antimicrobial therapy was initiated with vasopressor support. S. aureus was isolated from blood cultures, and the patient was treated with flucloxacillin. In the following days, the patient continued to have symptomatic asystolic pauses. Considering ischemic cardiomyopathy and diffusely scarred LV, we decided to implant a two-chamber cardioverter defibrillator. The patient began to be inotrope dependent. Despite the therapy, patient had symptoms and clinical signs of low cardiac output. Transthoracic echocardiography shows a dilated left ventricle with reduced EFLV. The aortic valve was described as tricuspid, degenerately altered, with an eccentric moderate AR directed towards the anterior mitral cusp. Additionally, to quantify the severity of aortic regurgitation, a transoesophageal echocardiogram was performed, which showed a moderate AR and a small round formation on the right coronary cusp, a possible vegetation. The patient was at that point defined as INTERMACS III profile and was referred to the Department of Cardiac Surgery for LVAD implantation. Intraoperatively, aortic valve endocarditis was verified and replacement with a biological prosthesis and occlusion of the left atrial appendage were performed, followed by LVAD implantation.

Conclusion: Temporary microaxial mechanical circulatory support devices may increase susceptibility to infective endocarditis. The presence of an intravascular and intracardiac foreign body facilitates bacterial adhesion and biofilm formation, particularly for highly virulent organisms such as Staphylococcus aureus. In addition, the device crosses the aortic valve, potentially causing endothelial injury and microtrauma to the valve leaflets, especially in degenerative valves, thereby creating a substrate for bacterial colonization during episodes of bacteremia.

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