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CASE REPORT

Prosthetic valve endocarditis 7 months after transcatheter aortic valve implantation diagnosed with 3D TEE

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Abstract Transcatheter aortic valve implantation (TAVI) was introduced as an alternative treatment for patients with severe symptomatic aortic stenosis for whom surgery would be high-risk. Prosthetic aortic valve endocarditis is a serious complication of surgical AVR (SAVR) with high morbidity and mortality. According to recent cases, post-TAVI prosthetic valve endocarditis (PVE) seems to occur very rarely. We present the case of a 75-year-old woman who underwent TAVI (Edwards Saphien XT) with an uneventful postoperative stay. She was diagnosed with endocarditis using three dimensional (3D) echocardiography on the TAVI device 7 months later and she subsequently underwent surgical aortic valve replacement. Little experience of the interpretation of transoesophageal echocardiography (TEE) and the clinical course and effectiveness of treatment strategies in post-TAVI endocarditis exists. We report a case of PVE in a TAVI patient which was diagnosed with three-dimensional transoesophageal echocardiography (3DTEE).

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1. Introduction

Transcatheter aortic valve implantation (TAVI) has evolved into an alternative to surgical aortic valve replacement (SAVR) for patients with high or prohibitive surgical risks who have severe aortic stenosis.[1] Since transcatheter aortic valve replacement (TAVR) was first successfully performed in 2002, the number of patients treated continues to exponentially increase. Recent advances in the available TAVI devices may make "complex" procedures feasible.[2]

In addition to significant comorbidities, TAVI patients are typically frail and have impaired mobility. These factors may render them more prone to infections, including endocarditis. However, experience with transcatheter prosthetic valve endocarditis (TPVE) remains limited, and the current guidelines do not include any specific provisions for TPVE.[3,4]

In this case presentation, we discuss the potentially growing problem of complications related to transcatheter valve implantation.

2. Case report

A 75-year-old woman with a significant history of RCA stenosis and symptomatic severe aortic stenosis presented to the emergency department with angina and New York Heart Association Class IV dyspnoea. She had been previously refused for conventional aortic valve replacement due to her high-risk profile. The patient's estimated operative risk was significantly high due to multiple comorbidities that included advanced age, atrial fibrillation, arterial hypertension, pulmonary hypertension and coronary artery disease.

A transthoracic echocardiogram (TTE) revealed severe aortic stenosis (mean gradient: 49 mmHg; AVA: 0.9 cm^2), mild aortic and mitral regurgitation, and an ejection fraction (EF) of 50% and pulmonary hypertension (pulmonary artery systolic pressure: 37 mm/Hg) were also noted. The aortic annulus diameter was measured at 21 mm with TEE.

The possibility of operative mortality was calculated to be 11.5% according to the scoring of the Society of Thoracic Surgeons (STS). Our institutional 'Heart Team' voted for TAVI, and she underwent an initially uneventful transfemoral implantation of a 26-mm Sapien XT® (Edwards Lifesciences, Irvine, CA) aortic bioprosthesis.

Prophylactic antibiotics and anticoagulation medication were administered before and during the procedure. First-generation cephalosporin was chosen as a prophylactic and administered during the hospital stay and until 1 week after discharge.

The TAVI procedure was applied in a catheterization laboratory under general anaesthesia with TEE guidance. Percutaneous access was achieved and closure was performed with a Prostar® XL (ProStar ™ XL10Fr, Abbott Vascular, Abbott Park, IL, USA) device. After the aortic valve was crossed, valvuloplasty at a pace of 200/min was performed using a 20-mm x 40-mm balloon, and a 26-mm Edwards — Saphien XT valve was then implanted. No additional complications were observed.

The transthoracic echocardiography was repeated after the procedure. A mild paravalvular leak was present, and the functions of the implanted aortic valve were good (average gradient: 11 mmHg). The pulmonary artery systolic pressure (PASP) was 25 mmHg. The TAVR was associated with a decrease in the PASP.

The patient was discharged on the 10th day following the procedure. The follow-up TTEs, which were performed at 1 month, 3 months and 6 months after discharge, revealed no changes in aortic valve function.

The patient was readmitted to our institution at seven months due to acute congestive heart failure and palpitation. Her body temperature was normal (36.8°C), the white blood cell count (WBC) was 7.2/μl, the C reactive protein (CRP) level was elevated (12.2 mg/dl), and there was no peripheral stigma of infective endocarditis or embolic phenomena. An increased aortic valve gradient (mean gradient: 37 mmHg) and mild aortic regurgitation were observed on TTE (Fig. 1). The pulmonary artery systolic pressure (PASP) was 40 mmHg. Two-dimensional TEE has

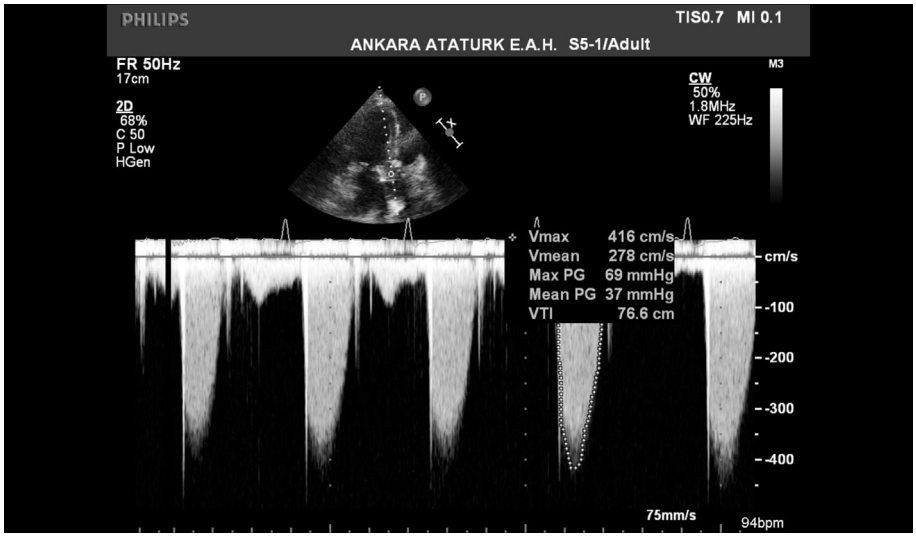

Figure 1 Increased aortic valve gradient on TTE.