A 70-year-old white man was admitted to the Department of Vascular Surgery with a critical right forearm ischemia caused by acute thromboembolic occlusion and underwent operative embolectomy. Microbiological testing revealed colonization of the embolus with Staphylococcus lugdunensis and S. epidermidis. Because of pain in the lower thoracic spine, elevated C-reactive protein, and a recent history of spondylodiscitis with evidence of coagulase-negative Staphylococcus spp., the patient was transferred to the Department of Neurosurgery 16 days after vascular surgery. S. epidermidis was then isolated from blood cultures. The patient had a history of coronary heart disease with reduced left ventricular function, atrial fibrillation, diabetes mellitus, and hemodialysis resulting from diabetic nephropathy, as well as kidney transplantation and subsequent kidney transplant failure in 2000. The patient was taking no immunosuppressive medication at admission. He had had a transcatheter aortic valve (CoreValve, Medtronic) implanted 12 months before as a result of severe native valve stenosis (logistic EuroSCORE, 33.11% at the time of implantation). He was transferred to our echocardiography laboratory with persistently elevated levels of C-reactive protein. Three months before transthoracic and transesophageal echocardiography (Movies I and II in the online-only Data Supplement), he was negative for signs of prosthetic valve endocarditis (PVE). Two- and 3-dimensional transesophageal echocardiography now showed an elongated mass 3 cm in length floating around a longitudinal axis within the stent lumen of the prosthetic valve. Apparently, the mass was attached to the stent struts. In addition, there were signs of a paravalvular abscess at the noncoronary sinus (Figure 1 and Movies III through V in the online-only Data Supplement). Minor paravalvular regurgitation was present at the left coronary sinus. The native valves did not show any signs of endocarditic lesions. The peak velocity across the valve had increased by ≈140 cm/s (Figure 2). After echocardiographic diagnosis of PVE and initiation of calculated antibiotic therapy with vancomycin, gentamicin, and rifampicin, the patient was transferred to the Department of Cardiac Surgery. The infected valve was replaced by a porcine valve (Hancock II, Medtronic; diameter 25 mm) under extracorporeal circulation. Intraoperative findings confirmed massive lesions on the biological parts of the transcatheter valve consistent with PVE (Figure 3). Surprisingly, 3 to 4 stent struts had penetrated the aortic sinotubular junction close to the noncoronary sinus. The valve was

**Figure 1.** Two-dimensional transesophageal echocardiogram of prosthetic valve endocarditis after transcatheter aortic valve replacement. Two-dimensional transesophageal echocardiography (A, long axis; B, short axis) showing a 3-cm floating endocarditic lesion within the stent lumen of a prosthetic transcatheter aortic valve (solid arrow). Signs of a paravalvular abscess can be seen close to the noncoronary sinus Valsalva (dashed arrow). Transesophageal images were obtained with a Phillips X7-2t transducer/iE33 ultrasound system on admission and a Siemens Acuson Sequoia ultrasound system 3 months before. Ao indicates aortic root; LA, left atrium; LV, left ventricle; and RA right atrium.
colonized by multiresistant coagulase-negative *Staphylococcus* spp. The patient was extubated on the day of surgery and discharged after 2 weeks.

There are only a few case reports of PVE after transcatheter aortic-valve replacement (TAVR). Cases of PVE on a transapical aortic valve (Edward Sapien) with *Enterococcus faecalis* and a transfemoral aortic valve (CoreValve) with *S. lugdunensis* were lethal and showed unusual shape and localization of the vegetations with complicating fistulas between the left ventricular outflow tract and the right or left atrium. The latter case report also described a mobile vegetation attached to the prosthetic stent. So far, 2 cases have been successfully treated medically. In a 3-year follow-up cohort of 70 patients undergoing TAVR who were declined surgical aortic valve replacement, 1 patient developed PVE. The 2-year rates of PVE in the Placement of Aortic Transcatheter Valve Trial (PARTNER) comparing TAVR (348 patients) and conventional surgical aortic valve replacement in high-risk patients who were still candidates for TAVR (351 patients) were comparable (4 versus 3 patients).

To the best of our knowledge, this is one of the first reports of a definite bacterial PVE on a transfemoral aortic valve confirmed by echocardiography and treated successfully with cardiac surgery. Two- and 3-dimensional echocardiography showed unusual position of the large vegetation within the stent lumen. Whether these echocardiographic findings are common for PVE after TAVR has to be further elucidated.

**Figure 2.** Two-dimensional transesophageal echocardiogram with transvalvular continuous-wave Doppler in the absence and presence of prosthetic valve endocarditis. Two-dimensional transthoracic echocardiography with continuous-wave Doppler measurement 3 months before (left) and on admission (right). The transvalvular peak velocity increased from ≈200 to 342 cm/s. Transthoracic images were obtained with a Siemens Acuson Sequoia (left) and a Philips IE33 (right) ultrasound system, respectively.

**Figure 3.** Intraoperative findings of the explanted aortic valve prosthesis. The prosthetic transcatheter aortic valve was removed during surgical aortic valve replacement. The stent struts penetrating the sinotubular junction distal to the noncoronary sinus were cut through (dashed arrows) to release the valve. Endocarditic material can be seen on the porcine pericardial leaflets (solid arrow).

References


Disclosures

None
Transcatheter Aortic-Valve Endocarditis Confirmed by Transesophageal Echocardiography
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