DIAGNOSTIC DILEMMAS

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Section Editor

Pneumonia and Inflammatory Arthritis Caused by Unusual Occupational Exposure or a Life-Threatening Infection Resulting From a More Commonly Encountered Mechanism?

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A 44-YEAR-OLD RENOVATION CONTRACTOR with a history of chronic low back pain developed symptoms consistent with an upper respiratory infection approximately 3 days after removing carpeting on which a decomposing human body recently had been discovered. The contractor was not wearing a respirator when he performed the work. He initially ignored his symptoms, but he eventually sought medical attention at a local community hospital complaining of a persistent fever, chills, night sweats, weight loss, a productive cough, dyspnea, orthopnea, and chest "heaviness" that was exacerbated with activity and partially relieved with rest. A diagnosis of pneumonia was made. The patient was given a dose of intravenous (IV) ceftriaxone and was discharged with a 5-day course of oral azithromycin. He returned a few days later continuing to complain of respiratory symptoms and reported that his left knee and several toes were swollen and painful. A laboratory analysis performed during this second visit revealed elevated erythrocyte sedimentation rate and C-reactive protein levels. The patient was treated with oral prednisone for presumed inflammatory arthritis and told to finish the prescribed course of antibiotics. He again returned to the hospital after completing the azithromycin because his symptoms had not improved. During this visit, the patient admitted self-administering a dose of IV morphine using a "clean" needle to treat his chronic back pain approximately 4 weeks before the onset of his symptoms. He denied other IV drug use. The physical examination was notable for a new grade II of VI holodiastolic murmur. Bilateral basilar rales were also present. Transesophageal echocardiography (TEE) was performed as part of the diagnostic evaluation (Figs 1–3 and Videos clips 1 and 2), and blood cultures were obtained. What is the diagnosis?

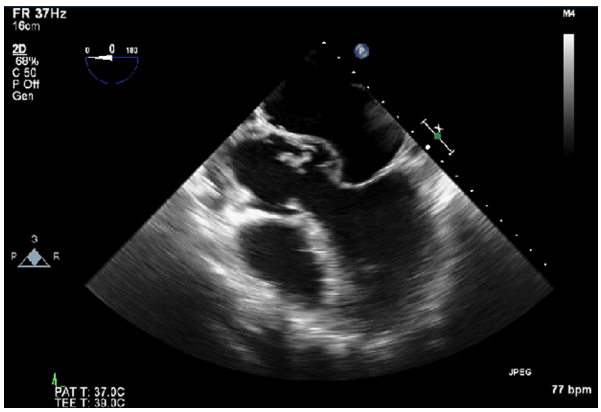

Fig 1. Midesophageal 5-chamber transesophageal echocardiography image.

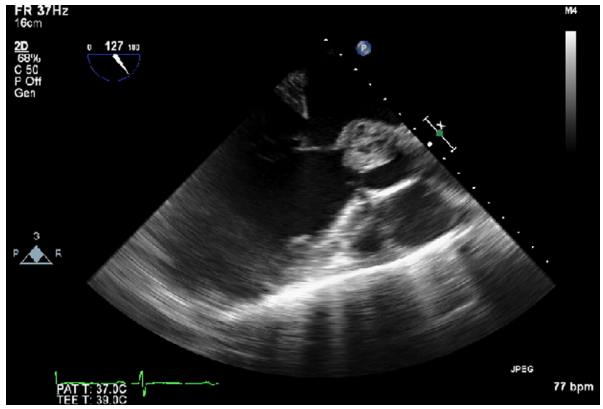

Fig 2. Midesophageal aortic valve long-axis transesophageal echocardiography image.

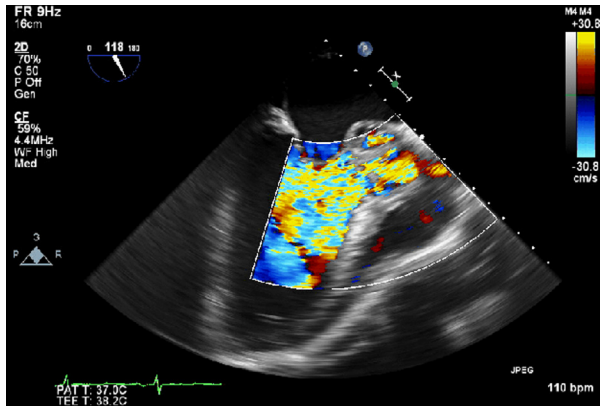

Fig 3. Midesophageal aortic valve long-axis transesophageal echocardiography color Doppler image.

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DIAGNOSIS: AORTIC VALVE ENDOCARDITIS WITH AORTIC ROOT ABSCESS, PSEUDOANEURYSM, AND SEVERE VALVULAR INSUFFICIENCY

The midesophageal 5-chamber TEE view demonstrated a large vegetation on the left aortic valve leaflet and an aortic root pseudoaneurysm extending into the proximal aspect of the anterior mitral leaflet (Fig 1). The midesophageal aortic valve long-axis TEE view showed that the noncoronary leaflet and another vegetation attached to this leaflet prolapsed into the left ventricular outflow tract (Fig 2 and Video clip 1), resulting in torrential aortic valvular insufficiency (Fig 3 and Video clip 2). The noncoronary and left coronary leaflets were thickened, and an aortic annular abscess was present (Figs 4 and 5 and Video clips 3 and 4). The pseudoaneurysm was located along the posterior aortic root and extended into the aortic-mitral curtain, mitral annulus, and proximal aspect of anterior mitral leaflet (Figs 1 and 6 and Video clip 5). Moderate mitral regurgitation also was observed, but the mitral valve was devoid of vegetations, and the leaflet structure appeared to be otherwise normal (not shown). Computed tomography with angiographic contrast demonstrated the presence of 2 distinct posterior aortic pseudoaneurysms within the noncoronary sinus of Valsalva measuring 2.0 cm and 1.3 cm in maximum diameter that communicated with the left and right sinuses, respectively (Fig 7).

The patient was transported to the operating room for aortic valve replacement and aortic root repair. During cardiopulmonary bypass, direct inspection of the aortic valve revealed widespread infection (Fig 8). Vegetations were confirmed on the thickened noncoronary and left coronary leaflets. The aortic annulus adjacent to these leaflets was destroyed. The native aortic valve was excised, and extensive debridement of the aortic wall, including the commissures of the left coronary and noncoronary sinuses, was performed. The corresponding aortic annulus of the noncoronary sinus and the adjacent half of the left coronary sinus also were excised to the level of the anterior mitral leaflet across the aortic-mitral curtain. The excised aortic tissue and valve demonstrated clumps of gram-positive cocci. The roof of the left atrium was debrided because the infection had spread to this structure from the pseudoaneurysms in the aortic wall. The aortic annulus and proximal root were reconstructed first using bovine pericardium. A left atriotomy was performed through the left atrial roof, and direct visual inspection indicated that the mitral valve was structurally normal, as the preoperative and intraoperative TEE studies suggested. A 32-mm annuloplasty ring was implanted, but some regurgitation remained after a pressurized saline injection test. An Alfieri stitch was placed between the A1 and P1 scallops, which substantially improved this residual regurgitation. The left atrium was closed using a bovine pericardial patch. Finally, a 25-mm Freestyle porcine valve (Medtronic, Minneapolis, MN) was implanted in the aortic position, and the aortotomy was closed. After systemic rewarming and cardiac de-airing, the patient separated from cardiopulmonary bypass without requiring inotropic support. A repeat TEE examination indicated that the aortic valve prosthesis was functioning normally with trivial aortic insufficiency. Mild mitral regurgitation was also present after the repair. These findings were deemed to be satisfactory to the surgery and anesthesia teams. The patient was transferred to the surgical intensive care unit with stable hemodynamics. Several sets of blood cultures obtained before surgery identified the organism as *Staphylococcus capitis*. He was weaned from mechanical ventilatory support, and his trachea was extubated on the first postoperative day. The remainder of his hospital

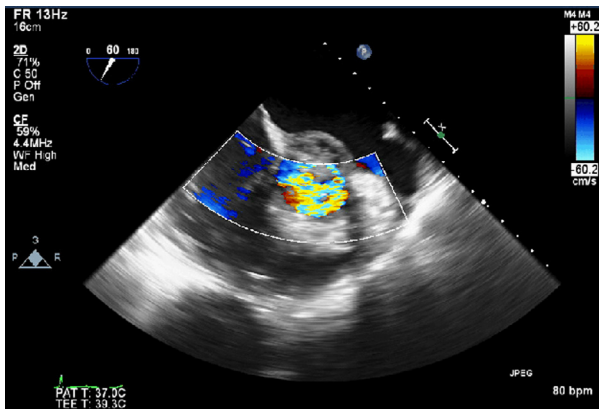

Fig 5. Midesophageal aortic valve short-axis transesophageal echocardiography color Doppler image obtained at end-diastole showing torrential aortic insufficiency.

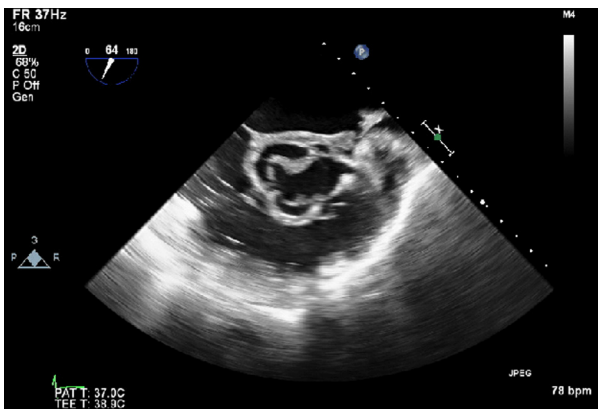

Fig 4. Midesophageal aortic valve short-axis transesophageal echocardiography image showing thickening of the posterior aortic root and noncoronary leaflet.

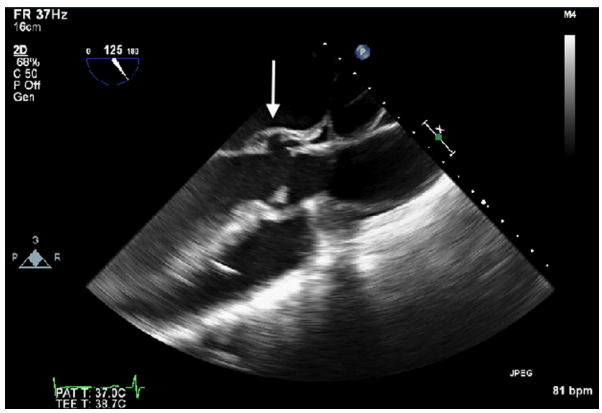

Fig 6. Midesophageal aortic valve long-axis transesophageal echocardiography image showing posterior pseudoaneurysm (arrow) extending into the proximal aortic root.