A 59-year-old reclusive man was found down in his home, presumably for at least 4 days. This had been preceded by progressive shortness of breath and profound generalized weakness for 2 weeks. There had been no recent use of intravenous drugs prior to onset of acute illness. On admission to the hospital, his blood pressure and body temperature were normal. He was tachycardic at 120 bpm in the presence of bilateral diffuse coarse crackles and decreased breath sounds at bases by chest auscultation. There was a 3/6 holosystolic murmur best heard at apex with radiation to the axilla. He was noted to have significant edema in bilateral lower extremities, with dry gangrene of the hands and feet bilaterally. His leukocyte count was 15,300/L (88% neutrophils) and the C-reactive protein was 146 mg/L. An echocardiogram showed sinus tachycardia, with no other abnormalities. The initial blood cultures grew out methicillin-sensitive Staphylococcus aureus and Streptococcus anginosus. He was placed on an intravenous antibiotic regimen of oxacillin and penicillin G.

Transthoracic echocardiogram revealed multiple vegetations involving both the mitral and aortic valves, with severe mitral regurgitation and mild aortic insufficiency. There were also multiple rounded hypoechoic mural structures in the right atrium and right ventricle (Movies I and II of the online-only Data Supplement). These lesions were better identified with contrast echocardiography using lipid-encapsulated microbubbles (Movie I of the online-only Data Supplement). Transesophageal echocardiography was then performed to further delineate the lesions and identify their attachment sites (Figure 1 and online-only Data Supplement Movies II through IV). Cardiac magnetic resonance imaging and computed tomography (CT) were also performed, which further characterized numerous well-delineated rounded lesions in the right atrium and right ventricle, some of which were of smaller sizes and not well visualized in echocardiograms (Figure 2 and online-only Data Supplement Movies V through VII). The largest lesion in the right atrium measured 3.8 cm and the one in the right ventricle measured 1.8 cm. Head, chest, and abdominal CT revealed multiple lesions in brain, both kidneys, and spleen consistent with infarctions. No obvious pulmonary emboli were seen.

A diagnosis of multisite infective endocarditis with mural involvement was made. All fungal cultures and HIV serology tests were negative. After he was optimized for his heart failure 1 week after initial presentation, he underwent mitral and aortic valve replacements. Intraoperatively, it was noted that there were multiple cystic structures attached to the free wall of the right atrium as well as in the right ventricle from the apex toward the outflow tract adjacent to the pulmonary valve. These lesions were intertwined with the trabeculae of the right ventricle. The wall of the cystic structures in the right atrium and right ventricle was very friable. Attempt of excision of the cystic structures led to the expression of purulent fluid (Figure 3). Despite antibiotic treatment and successful surgery with mitral and aortic valve replacement,
he expired several days later secondary to overwhelming sepsis.

Intracardiac infection involving nonvalvular structures or mural endocarditis is uncommon. Mural endocarditis has been reported in all cardiac chambers and in pulmonary veins or arteries.1–2 As these infections are often secondary, they are associated with valvular vegetations and regurgitation, prosthetic valves, pacemakers, myocardial abscesses, endocardial plaques, and congenital shunts. Systemic embolization has also been frequently associated. The most common pathogens are bacterial, such as Staphylococcus and Streptococcus species.3 While rare cases of cardiac rupture have been described as a result of mural endocarditis, the most common cause of death is overwhelming sepsis.

This case was unusual because of the presence of multiple mural vegetations in both the right atrium and right ventricle, in addition to valvular vegetations, with systemic embolism and progressive sepsis. The extent of peripheral gangrenous necrosis was remarkable, as were the size and mobility of the mural vegetations observed in this patient.

Disclosures

None.

References


Multisite Infective Endocarditis With Mural Vegetations in the Right Atrium and Right Ventricle
Gary S. Mak, Jeffrey C. Milliken and Farhood Saremi

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