A 72-year-old female renal transplant recipient was admitted with asthenia and low-grade fever. Two months earlier, she developed nodular pulmonary infiltrates (Figure 1), and microbiological examination of bronchoalveolar lavage fluid established the diagnosis of pulmonary nocardiosis. She had been taking ciprofloxacin and minocycline since that time. Physical examination was unremarkable, and the ECG revealed normal sinus rhythm with atrial bigeminy and no conduction abnormalities (Figure 2). Because of persistent fever, cerebral and thoracoabdominal computed tomography scans were performed and revealed multiple cystic lesions in the brain and mediastinum. Subcutaneous nodular lesions were also seen in the thoracoabdominal wall. Needle aspiration of one of the latter revealed gram-positive bacilli and grew Nocardia farcinica.

On admission, transthoracic echocardiography showed large cystic hyperechogenic masses localized around the lateral left ventricular wall (Figures 3A and 3B), without signs of compression. Cardiac magnetic resonance allowed tissue characterization. In addition to subcutaneous nodules, T1- and T2-weighted spin-echo short-axis images showed multiple circumscribed masses surrounding the left ventricle and impinging on the right atrium. These masses appeared isointense on T1-weighted images (Figure 4A) and hyperintense on T2-weighted images (Figure 4B) and thus were suggestive of noncirculating high-protein fluid content. Mild associated myocardial edema was suspected visually on T2-short-τ inversion recovery images (STIR; Figures 4A through 4C). Delayed imaging after gadolinium injection (Figures 4C and 4D) showed contrast uptake of the surrounding membrane, as well as the adjacent myocardium and pericardium, consistent with encapsulated pericardial abscesses infiltrating the myocardium.

Nocardia species are ubiquitous soil-born aerobic, gram-positive actinomycetes that usually affect severely immunocompromised patients through the respiratory tract. Pulmonary infection is the most common form of the disease, but hematogenous dissemination to other organs is possible. Sites of involvement may include skin and soft tissue, central nervous system, bones and joints, kidneys, and heart.

An infection of the heart with Nocardia can involve either the endocardium by hematogenous spreading or the pericardium by local extension from pulmonary lesions. Most Nocardia pericarditis in the literature has resulted in pericardial tamponade or constrictive pericarditis. In the present case, the masses were well encapsulated according to cardiac magnetic resonance assessment, and transthoracic echocardiography showed no signs of constriction or tamponade. Accordingly, no percutaneous or surgical drainage was performed. Optimized antibiotic regimen (moxifloxacin, sulfamethoxazole, and trimethoprim) led to clinical improvement and significant regression of the cysts (Figure 5).

In conclusion, we report a rare case of disseminated nocardiosis with pericardial involvement, which suggests the...
predominant role of cardiac magnetic resonance to provide noninvasive 3-dimensional data on cardiac anatomy and function and tissue characterization through a wide range of single-scan sequences. The safety of gadolinium agents may allow for repeated imaging follow-up, finally providing valuable guidance for medical management and treatment efficacy. Cardiac magnetic resonance, in addition to standard transthoracic echocardiography, appears to be a precious tool in the workup of pericardial or myocardial masses of unknown origin, as illustrated by this case of a patient presenting with cardiac nocardiosis.

Figure 2. Baseline 12-leads ECG showing normal sinus rhythm with atrial bigeminy (*) and lack of conduction abnormalities.

Disclosures
None.

References

Figure 3. A and B. Transthoracic parasternal long-axis view and apical 4-chamber view showing a large hyper-echogenic structure (B; white arrows) surrounding the inferolateral part of the left ventricle (LV). LA indicates left atrium; RV, right ventricle; and RA, right atrium.
Figure 4. A and B, T1- and T2-weighted magnetic resonance images in short-axis view showing multiple circumscribed masses surrounding the left ventricle (LV; white arrows). The masses appeared isointense on T1-weighted images (A) and hyperintense on T2-weighted images with mild myocardial involvement (B). C and D, Delayed images after gadolinium injection in short-axis (C) and 4-chamber views (D) showing contrast uptake of the surrounding membrane and adjacent myocardium (white arrows) consistent with encapsulated pericardial abscesses infiltrating the myocardium. LA indicates left atrium; RV, right ventricle; and RA, right atrium.

Figure 5. A and B, Regression of the masses (white arrows) seen at 4-month follow-up on steady-state free-precession cine images in short-axis (A) and 4-chamber views (B). C and D, T2-weighted images in short-axis view performed at 4- and 12-month follow-up showing significant reduction (compared with Figure 3B) of the abscesses under antibiotic treatment (white arrows). LV indicates left ventricle; LA, left atrium; RV, right ventricle; and RA, right atrium.
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Chan-Il Park, Stéphane Noble, Robert F. Bonvini and Chirine Parsai

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