provide a higher efficacy while minimizing peak current and potential myocardial injury.

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Echocardiographic Findings in a Patient with Candida Endocarditis of the Aortic Valve*

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The echocardiographic appearance of fungal endocarditis of the aortic valve is described in a patient who subsequently died from this disease. In addition, the progressive growth of the vegetation on serial echocardiograms was recorded, and premature closure of the mitral valve was absent, notwithstanding perforation of two aortic cusps.

Echocardiography can be a useful adjunct in detecting valvular vegetations in endocarditis, but such echocardiographic detection has been reported infrequently with fungal endocarditis. In this case study the echocardiographic findings are described in a patient with Candida endocarditis, and some unique features are discussed.

METHODS
Cardiac ultrasonography was performed using an echocardiograph (Ekoline Mark 20A). The transducer employed had a unocrystal piezoelectric element focused at 7.5 cm, with a diameter of 0.5 inches, a frequency range of 2.25 MHz, and a repetition rate of 1,000 per second. The echocardiogram was recorded on a built-in multichannel recorder (Cambridge) with paper that developed under ultraviolet light. The patient was placed in the supine position, and cardiac landmarks were identified and studied using the methods described by Feigenbaum and Shah.

CASE REPORT
A 46-year-old woman, who was an alcoholic and heroin addict, complained of chills and fatigue beginning four days prior to her admission. On physical examination her temperature was 40°C (104°F), blood pressure was 105/60 mm Hg, and there was a holodiastolic and systolic ejection murmur at the apex of the heart. Several blood cultures were positive for Streptococcus viridans, and the patient was given therapy with penicillin for three weeks. After discharge, she was lost to follow-up.

The patient reentered the hospital 3 months later with pain in the left upper quadrant and nightly fevers. Therapy with penicillin and streptomycin was started. A spleen scan was positive for a splenic infarction. The chest x-ray film was normal, and the electrocardiogram showed left ventricular hypertrophy. An echocardiogram revealed a dense band of shaggy echoes in the posterior aortic root, seen best during diastole (Fig. 1). A second echocardiogram two weeks later revealed an enlarging dense band of aortic echoes (Fig 2). Premature closure of the mitral valve was not seen on either echocardiogram.

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Several blood cultures grew yeast, and therapy with amphotericin B was started. Two days later, on the 16th hospital day, the patient became comatose and died shortly afterwards. At autopsy, all three aortic cusps were found to have vegetations which grew out Candida albicans. The noncoronary aortic cusp had the largest amount of vegetation, while the right cusp had the least (Fig 3).

Discussion

Cardiac ultrasonographic studies in our patient demonstrated multiple echoes near the posterior aortic root that appeared shaggy and lacked the discrete linearity of a calcified aortic cusp (Fig 1). Postmortem examination showed that these echoes corresponded to involvement of the noncoronary cusp and the left aortic cusp, which confirms Gramiak and Shah’s contention that the right coronary cusp is the anterior leaflet and the noncoronary cusp is the posterior leaflet on echocardiographic examination.

The shaggy, dense echoes had increased in size two weeks later on a repeat study, indicating that the patient’s endocarditis had not responded to penicillin and streptomycin therapy and, in fact, was progressing. This information, together with her continuing fever and two subsequent positive blood cultures for yeast, prompted us to change her medication to amphotericin B.

Premature closure of the mitral leaflet, which usually implies severe aortic insufficiency in a normal or noncompliant left ventricle, was absent in our patient. Such a finding might be expected in chronic aortic insufficiency, where a hypercompliant ventricle blunts the hemo-
dynamic effect of a large volume overload, however, our patient never showed signs of a hyperdynamic circulation, and her heart size remained normal. It is most likely that premature closure was absent, because the huge aortic valve vegetations, which were obstructing the outflow tract at postmortem examination, prevented hemodynamically significant regurgitation from occurring. Gottlieb et al1 pointed out similar observations in two patients with aortic valvular endocarditis.

Echocardiography is a useful tool in establishing the diagnosis of endocarditis, particularly in those patients where the clinical presentation is subtle. Furthermore, it provides a new method with which to follow the progress of the patient.

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Onset of Sarcoidosis with Left Ventricular Failure and Multisystem Involvement*

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A patient presented with acute left ventricular failure, then developed cranial nerve palsies, myopathy, fever and hyperuricemia. Sarcoidosis was not diagnosed until the pulmonary congestion cleared, revealing hilar adenopathy and residual mottling. Thereafter, uveitis was noted and scalene and muscle biopsies confirmed the diagnosis.

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FIGURE 1. Posteroanterior chest roentgenogram on admission, showing bilateral alveolar-filling infiltrates with confluence in the central zones and cardiomegaly, an appearance typical of acute left ventricular failure.