

# A Case of Myocardial Abscess Evaluated by Radionuclide Techniques: Case Report

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***A patient with infective endocarditis was evaluated by Ga-67 citrate imaging, Tc-99m pyrophosphate imaging, equilibrium gated blood pool imaging, and Tl-201 imaging of the chest. The diagnosis of ventricular abscess was first suggested by an abnormal gallium scan. At surgery, an abscess was identified in the area where the scan was abnormal, and postoperatively a repeat scan was normal.***

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Images obtained after the intravenous administration of Ga-67 citrate have been found useful in the diagnosis and localization of a variety of inflammatory processes (1). Previously published Ga-67 images in patients with bacterial endocarditis have shown increased uptake of the tracer in the region of the heart in some but not all instances (2). We have studied a patient with staphylococcal endocarditis in whom the presence of a focal abnormality in Ga-67 images of the chest was the first indication of a ventricular abscess; this was later confirmed at the time of mitral-valve replacement. A repeat scan done postoperatively showed no abnormality.

## CASE REPORT

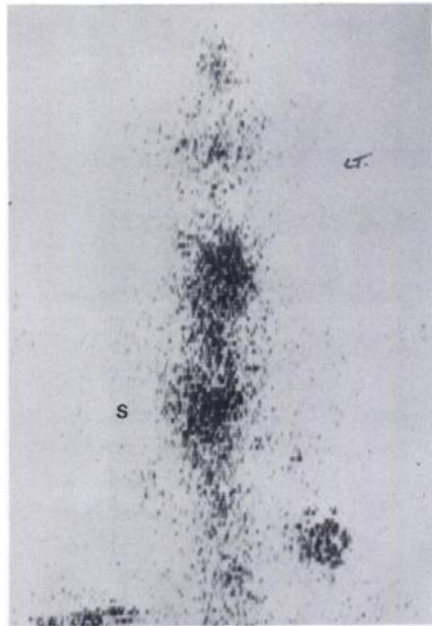
A 67-year-old man, with a history of malignant melanoma resected 6 yr before admission, was admitted to the hospital with the chief complaint of fever, diarrhea, and myalgias of two weeks' duration. He had previously been noted to have a murmur of mitral insufficiency, and had two previous episodes of subacute bacterial endocarditis, both of which were successfully treated with antibiotic therapy. Physical examination on admission revealed an ill-appearing male with an oral temperature of 39.2°C. Funduscopic examination revealed arteriolar narrowing but no hemorrhages. Basilar inspiratory rales were noted in both lungs. Cardiac examination showed left ventricular prominence, a fourth heart sound, and a grade IV/VI holosystolic murmur radiating to the axilla. There was no evidence of splinter hemorrhages or petechiae in the extremities. Admission laboratory data included a hematocrit of 33%, an erythrocyte sedimentation rate of 17 mm/hr, and

a white blood cell count of 10,500 with a differential showing a shift to the left. The electrocardiogram revealed a wandering atrial pacemaker and left axis deviation; the chest x-ray showed cardiomegaly but no parenchymal infiltrates. Because of the suspicion of endocarditis, several blood cultures were obtained, and by the third hospital day these were growing *Staphylococcus epidermidis*. Oxacillin therapy was begun. Although the patient initially became afebrile, a recurrence of fever and continued malaise suggested the possibility of an occult abscess, and a Ga-67 citrate whole-body scan was obtained. The images at 72 hr after injection revealed a discrete area of abnormal Ga-67 accumulation in the region of the basal left ventricular myocardium (Figs. 1 and 2). The findings were felt to hint at the presence of an abscess at the level of the mitral annulus. Technetium-99m pyrophosphate scintiphotos of the chest 2 hr after injection did not reveal any abnormal areas of accumulation, and Tl-201 resting myocardial perfusion images were normal. A radionuclide angiogram revealed enlargement of the left atrium and an increased left ventricular ejection fraction, consistent with the presence of significant mitral insufficiency. No regional abnormalities of wall motion were detected. These findings were corroborated subsequently by cardiac catheterization, which, in addition, revealed calcification of the mitral annulus. An echocardiogram revealed mitral prolapse but no

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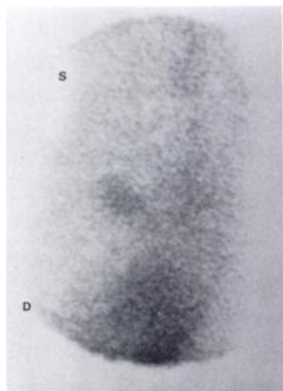
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**FIG. 1.** Anterior rectilinear scan of head and chest obtained 72 hr following injection of Ga-67 shows focal uptake in left hemithorax. (S) indicates level of manubrium sternum.

evidence of vegetations.

Two months after admission, the patient was transferred to a nursing home for convalescence, but because of increasing dyspnea and edema of the feet, he was readmitted 3 weeks later, at which time physical examination confirmed the presence of increasing congestive failure. The next day he was febrile, and several blood cultures were positive for *Staphylococcus*. The patient was placed on parenteral antibiotic therapy and scheduled for surgery because of increasing cardiac failure and probable persistent sepsis. At surgery, in addition to the expected mitral valve disease, a myocardial abscess inferior to the



**FIG. 2.** Left lateral scintiphoto of chest obtained 72 hr following injection of Ga-67 confirms cardiac location of the abnormality seen in Fig. 1. Vertebral column appears at right. (S) indicates level of manubrium sternum, (D) level of diaphragm.

mitral annulus was identified and drained. There was no evidence of metastatic melanoma. Mitral and tricuspid prostheses were inserted. Antibiotic therapy was continued, and the postoperative course was uneventful. A repeat Ga-67 citrate image of the thorax revealed no trace of the previously noted abnormality.

#### DISCUSSION

The use of Ga-67 citrate scanning to identify areas of inflammation secondary to bacterial infection has been described (1,3,6). Wiseman et al. (2) reported the results of Ga-67 scanning in 11 patients with bacterial endocarditis and found abnormal uptake in the region of the heart in 64% of the cases scanned 72 hr after an injection. One of these patients had increased Ga-67 accumulation in the region of an infected pacing electrode.

Recent evidence suggests that abscess formation in patients with infective endocarditis is not an uncommon occurrence (7,8). The presence of abscess may significantly alter the prognosis in these patients by affecting both the response to medical management and the success of surgical intervention (7). Myocardial abscesses are generally diagnosed either at the time of surgery, that is, discovery of abscess at the time of valve replacement, or at autopsy. Clearly, there is a need to identify these patients early in their clinical courses, and alternate means of diagnosis must be sought. The results described in this report suggest that conventional Ga-67 citrate imaging of the chest may be of use in identifying patients with intramural abscesses. We are continuing to evaluate patients with infective endocarditis in an attempt to define better the role of Ga-67 imaging.

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