were referred for ^{201}Tl SPECT because of risk factors (hypertension, smoking, obesity, etc.) and/or to investigate the possibility of coronary disease as a cause of LBBB. These patients did not undergo catheterization, but were followed for more than 1 year and judged clinically not to have coronary disease. Reversible septal perfusion defects were observed in all ten of these individuals. At the reviewers' request these additional patients without cath correlation were not included in the final manuscript.

Thus, in the combined population of these ten patients with negative clinical follow-up and the ten reported in our article with angiographically normal coronaries, 19 of 20 had an increase on the normal lateral-to-septal count density ratio in immediate postexercise images. Although the numbers are not large enough to generalize regarding the percentage of patients with LBBB and false-positive ^{201}Tl SPECT studies, we feel that our results should caution nuclear medicine specialists and referring physicians that septal abnormalities mimicking ischemia occur "very frequently" in patients with LBBB. Patients referrals should be screened and studies should be interpreted with this knowledge.

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Left Ventricular Pressure-Volume Analysis by Radionuclide Angiography

TO THE EDITOR: In a recent article in the *Journal of Nuclear Medicine*, Purut et al. (*1*) describe a "new" method to determine left ventricular pressure-volume loops in the clinical setting. We agree with the authors that this is a promising technique for the evaluation of left ventricular function, with numerous clinical applications. However, the authors' statement that this is "the first use of radionuclide techniques to determine P-V loops of the left ventricle in the clinical setting" is incorrect. Over the past 5 years, there have been numerous clinical reports from several centers using combined gated-equilibrium radionuclide angiography and high-fidelity micromanometer-tipped catheters in the catheterization laboratory to construct such loops for the assessment of left ventricular systolic and diastolic function in man (*2–8*). Thus, the study of Purut et al. (*1*) is but one in a series of investigations demonstrating the utility of radionuclide angiography in the clinical evaluation of left ventricular P-V relations. This appears to be the first such study to use first-pass methods, but it is far from the first to address this concept.

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REPLY: We thank Drs. Bonow, Bacharach, and Green for their comments. We concur that the coupling of radionuclide-determined left ventricular volume curves with micromanometer pressure measurements is not novel and we do not propose to have originated the concept. However, we do maintain that the technique presented in our manuscript is the first to use radionuclide methods to produce true left ventricular pressure-volume loops in the clinical setting (*1*). Previous attempts by other investigators using gated radionuclide angiography have relied on techniques which approximate the ventricular volume curve by averaging several hundred beats over several minutes, then complexing this data with a pressure curve averaged from an arbitrary subset of these beats, or, indeed, from an entirely different set of beats. This results in an approximation of the pressure-volume loop which is reasonably accurate only in the setting of complete hemodynamic stability. In contrast, our technique for the first time produced *true* left ventricular pressure-volume loops using a highly restricted number of beats for which *pressure and volume data were matched throughout the entire cardiac cycle of each and every beat*, as shown in Figure 2 of the text. The high resolution inherent in this technique has been crucial for the successful completion of subsequent studies of cardiac hemodynamics before and after balloon aortic valvuloplasty (*2,3*) and in the operating room (*4*). In the latter study, two series of four pressure-volume loops were obtained in under 5 min per series as ventricular preload was manipulated before and after cardiopulmonary bypass. Moreover, our technique is readily applicable clinically in that it does not interfere with routine patient care, thereby obviating the consequences of transporting potentially unstable patients to a special facility.

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