trol group and the osteoporotic group, and the difference from the primary hyperparathyroidism group was only significant at the 5% level. There was no overlap between individual patients in the control group and those in the renal osteodystrophy and osteomalacia groups. Only one patient in the Paget's group, but four (50%) in the primary hyperparathyroidism group, fell within the absolute control range.

Although skeletal plasma clearance is an interesting measure, which would be expected to reduce the influence of varying real function, we are uncertain as to its exact meaning or clinical application. Individual patients with primary hyperparathyroidism can be clearly differentiated from control subjects by the 24-hr WBR of Tc-99m HEDP, and in our opinion this test provides a more sensitive indicator of skeletal disease.

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## The Predictive Value of Myocardial Perfusion Scintigraphy after Stress in Patients without Previous Myocardial Infarction

The article by Turner et al. (*1*) is certainly an excellently conceived study, but it is unfortunate that there is a grave limitation in the method of imaging these patients. The use of Polaroid film with the inherent lack of contrast that hard-copy radiographs offer, and the lack of computer manipulation—specifically, nine-point smoothing and background subtraction—severely limit the ability to interpret myocardial perfusion studies. If one is exposed to both modalities, one would hardly choose the Polaroid photographs as a basis for interpretations. It is unfortunate that this is the only modality available in the study, and I am convinced it has diminished the value of the work. I hope that future studies in this exciting new aspect of nuclear medicine are not limited by imaging methods using Polaroid studies without some form of processing as described.

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### REFERENCE

*1.* TURNER DA, BATTLE WE, DESHMUKH H, et al: The predictive value of myocardial perfusion scintigraphy after stress in patients without previous myocardial infarction. *J Nucl Med* 19: 249–255, 1978

## Reply

We are pleased that Dr. Cusmano regards our study as "excellently conceived," although he obviously has doubts about the excellence of its execution.

Thallium-201 images on transparent display media are subjectively more appealing than Polaroid images. One should not, however, assume that this necessarily translates into superior detectability of disease. We usually acquire Tl-201 images simultaneously on transparent (Kodak RP) and Polaroid films; and although we have not compared observer performance with these two media in a rigorous manner, it is our impression that perfusion defects "seen" in images recorded with one medium can always be readily appreciated in images recorded with the other. At first glance, this may seem surprising. On theoretical as well as empirical grounds, however, one would not expect contrast enhancement to offer much advantage in the interpretation of images of low count density (*1*). Furthermore, distinguishing normal from abnormal variations in the distribution of Tl-201 in images of the myocardium may be more of a problem than detection of those variations.

Dr. Cusmano's conviction that processing of Tl-201 images makes a world of difference in observer performance is shared by others. His criticism, however, should be tempered by the knowledge that objective evidence to support this thesis is hard to come by: as of this writing, no well-designed observer performance experiment comparing processed and unprocessed Tl-201 imaging has been published. Nonetheless, we recognize the possibiilty that image processing may have improved the inherent detectability of myocardial perfusion abnormalities in our series, and, in fact, we dealt with this possibility in our paper (*2*). As we have noted therein, it would have taken a very great increase in sensitivity to alter our conclusions: the sensitivity of Tl-201 scintigraphy would have to be close to 95% (with a specificity of 97%) in order to apply the test confidently as a pre-angiographic screening procedure for patients with a prior probability of coronary artery disease as high as 50%, e.g., patients with atypical angina pectoris (*3,4*). Furthermore, even if processing of Tl-201 perfusion scintigrams were to result in a sensitivity as high as 95% with a specificity of 97%, its application as a pre-angiographic screening test would be inappropriate for patients with typical angina pectoris: the predictive value of a negative test would be only about 50%, because the prevalence of significant coronary artery disease in this population is approximately 95% (*3,4*).

The foregoing reasoning leads us to the conclusion that even if processing of Tl-201 images proves to be as marvelous as Dr. Cusmano thinks it is, he and the rest of us had better apply Tl-201 scintigraphy selectively, or we will be making large numbers of false-negative diagnoses. That is the essence of the "message" of our paper, and we do not believe that the use of transparent display media or any amount of image processing will, as Dr. Cusmano suggests, "diminish the value" of that message.

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*2.* TURNER DA, BATTLE WE, DESHMUKH H, et al: The predictive value of myocardial perfusion scintigraphy after stress in patients without previous myocardial infarction. *J Nucl Med* 19: 249–255, 1978

*3.* ROSS RS, FRIESINGER GC: Coronary arteriography. *Am Heart J* 72: 437–441, 1966

*4.* MCCONAHAY DR, MCCALLISTER BD, SMITH RE: Post-exercise electrocardiography: Correlation with coronary arteriography and left ventricular hemodynamics. *Am J Cardiol* 28: 1–9, 1971

## Platelet Contamination of Radioactive Colloid Labeled Leukocyte Preparations

Human leukocytes labeled with gamma-emitting isotopes are potentially useful for detecting sites of inflammation