REPLY: We would like to thank Dr. Van Heerden for his comment on our paper describing "Mickey Mouse sign in Paget's disease" (*1*) and for forwarding to us a copy of his article (*2*). Unfortunately, our literature search did not reveal Dr. Van Heerden's publication on this subject that appeared in the *South African Medical Journal*, probably because it was written in Afrikaans, and also because it dealt specifically with the role of pinhole scintigraphy.

Of note is that the appearance of the vertebrae affected by Paget's disease in our study sample mimicked Mickey Mouse rather than a "T" or "champagne glass." However, we agree that the abnormality reported in Dr. Van Heerden's article appeared more like a "T" or champagne glass. Although the exact reason for this minor discrepancy is unclear, it may be due to a difference in the imaging technique, parallel-hole collimation versus pinhole collimation. Since pinhole imaging for evaluating vertebral pathology is not routinely performed for this purpose, we may have to rely on our study result to make this distinction.

Nevertheless, we are pleased to learn that a similar finding has previously been described, which supports the recommendation made in our recent communication.

REFERENCES

1. Estrada WN, Kim CK, Alavi A. Paget's disease in a patient with breast cancer. *J Nucl Med* 1993;34:1214–1216.
2. Van Heerden BB, Prins MJ. Die waarde van speldgatkollimator-opnames in die flikkergrafiese diagnose van werwelpatologie. *S Afr Med J* 1989;75:280–283.

Chun K. Kim
Mount Sinai Medical Center
New York, New York

Abass Alavi
Hospital of the University of Pennsylvania
Philadelphia, Pennsylvania

In Support of Cardiac PET

TO THE EDITOR: The position statement of the Cardiovascular Council of the Society of Nuclear Medicine in *JNM* (*1*) provides a solid foundation for the clinical and research applications of PET in patients with cardiac disorders.

Certainly cardiac research studies with PET for investigations of cardiovascular pathophysiology have yielded information that could not have been obtained any other way.

Likewise, investigations of myocardial viability and myocardial perfusion in patients introduced the clinical cardiologist to new horizons such as the preoperative and postoperative relationships between myocardial perfusion, glucose uptake and postoperative functional recovery (*2*). Similarly, studies of absolute and relative coronary vascular reserve (*3*) were only possible because of the availability of PET.

Viability

As Opie and Camici indicated (*4*), measurement of the uptake of tissue deoxyglucose (FDG) does not allow the computation of glucose oxidation nor of glycogen synthesis. However, FDG is an excellent indicator of membrane integrity of some glucose pathways and of myocardial viability. Moreover, FDG's uptake can be optimized by use of glucose and insulin infusion (*5*).

As the position statement recognizes, ^{82}Rb (*3*) and ^{11}C-acetate (*6*) may have a role in measuring myocardial viability.

I totally agree with the statement that further studies are needed in patients with acute infarction. Our own research (*7*) and that of Yaoita et al. in the same issue of *JNM* (*8*) indicate that radiolabeled deoxyglucose can accumulate in necrotic myocardium in the acute phase of the process. This needs further characterization since it is likely an expression of enhanced macrophage activity in the necrotic regions.

Coronary Flow

PET is the only modality which allows the clinician to quantitate regional myocardial blood flow. Gould (*3*) and Gewirtz (*9*) have presented a very persuasive case as to why it is very important to measure absolute and relative coronary vascular reserves in many cardiac patients. These measurements have also been performed by Geltman et al. (*10*). Presently, PET is the only modality providing these kinds of data before and after interventions in patients with cardiovascular disease.

Because of superb spatial resolution and optimized attenuation correction, it is not surprising that the sensitivities and specificities of cardiac PET for detection of coronary artery disease and for assessment of its physiologic sequelae are superior than those of cardiac SPECT.

Research

At recent meetings of the SNM, assessment of cardiac perfusion and metabolism by PET and NMR spectroscopy have been discussed (*11*).

Because of technical considerations, NMR spectroscopy cannot presently yield metabolic information transaxially as PET does.

Clinical and animal investigations with PET can answer the following questions:

1. What is the range of flow heterogeneity (*12*) in the human heart and how does perfusion distribution change in ischemic hearts?
2. What are the precise flow ranges in the hibernating myocardium and how do they correlate with deoxyglucose uptake and with accumulation of ^{11}C-acetate?
3. How do PET radionuclides trace substrate preference in the human heart and in the presence of acute and chronic ischemia?
4. What are the needs for studies with a perfusion tracer, a metabolic tracer, an infarct tracer, or a marker of myocardial hypoxia in the characterization of a patient with acute myocardial infarction receiving thrombolysis?

Present and Future

The Cardiovascular Council's statement should be strongly supported because cardiac PET will facilitate the growth in the clinical care of patients with cardiac diseases and will enhance many research studies in the areas discussed above and in areas such as neurotransmitters and radiopharmaceutical design.

REFERENCES

1. Schelbert H, Bonow RO, Geltman E, Maddahi J, Schwaiger M. Position statement: clinical use of cardiac positron emission tomography. *J Nucl Med* 1993;34:1385–1388.