LETTERS TO THE EDITOR

Myocardial Imaging with Tl-201

The beautiful series of experiments described by Narahara et al. (*1*) serve to point out one of the deficiencies of instrument evaluation that has become part of the accepted folklore of nuclear medicine—namely, that the relative performance of two imaging instruments can be quantitated by comparing MTFs obtained from the responses of the devices to line sources with or without scattering media, multiplied by some power function of their respective sensitivities.

The effects of scatter are thus grossly underestimated. It is self-evident that the image formed by scattered photons should depend on activity distribution and tissue density, two parameters that are highly structured. In spite of this, the analysis of the contributions from scatter to image quality are based on the assumption that "scattered radiation is presumed to represent background and contains no structural information" (*2*). Other authors in the field have implicitly or explicitly made the same assumption, which is clearly negated by the data presented by Narahara and coworkers. Performances indices based on simplistic assumptions and corroborated with simple experimental configurations cannot be used to predict image quality under realistic imaging situations, where scatter contributes a false image that is dependent on the activity distribution (within and without the field of view) and on tissue density. This scatter image is pure noise, but is structured with frequency and spatial components that overlap those of interest. While the assumption described above may be adequate to compare two almost identical instruments (e.g. two cameras with energy resolution of 15% and 17% FWHM at 140 keV), it will yield results that grossly underestimate the advantages that elimination of scatter through the use of detectors with enhanced energy resolution—e.g., germanium with 1–3% FWHM energy resolution at 140 keV—can bring to clinical gamma imaging.

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1. NARAHARA KA, HAMILTON GW, WILLIAMS DL, et al: Myocardial imaging with thallium-201: An experimental model for analysis of the true myocardial and background image components. *J Nucl Med* 18: 781–786, 1977

2. ATKINS FD, BECK RN, HOFFER PB, et al: Dependence of optimum baseline setting on scatter fraction and detector response function. *Medical Radionuclide Imaging*, IAEA-SM-210/76 I: 101–118, 1977

The Role of Ga-67 Citrate Imaging and Diagnostic Ultrasound in Patients with Suspected Abdominal Abscesses

The experience of Kumar et al., comparing abscess detection with Ga-67 and ultrasound (*1*) (*J Nucl Med* 18: 534–537, 1977) agrees generally with ours. We would like to point out, however, that there are regional differences that can make one technique superior to the other, depending upon the area to be searched.

Due to normal uptake of Ga-67 by the liver, peri-hepatic abscesses—particularly subdiaphragmatic—are difficult to detect utilizing this modality. In ultrasonography on the other hand, the presence of the liver is quite useful, for it displaces bowel that might otherwise block sound transmission due to its gas content, and thus renders this area ideal for ultrasonic search. Similarly, in the pelvis, the presence of a filled bladder allows detailed ultrasonic exploration. It is in the area in between, where the presence of bowel gas seriously interferes with ultrasonography, that Ga-67 scanning may be superior, although large bowel activity often poses difficulties in interpretation here.

In practice, of course, one often does not know in advance the most likely area of involvement. Nevertheless, it is worthwhile bearing these divisions in mind.

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REFERENCE

1. KUMAR B, ALDERSON P, GEISSE G: The role of Ga-67 citrate imaging and diagnostic ultrasound in patients with suspected abdominal abscesses. *J Nucl Med* 18: 534–537, 1977

Reply

In regard to the Letter to the Editor from Dr. M. A. Winston, I generally agree with his comments. I would like to point out, however, that in most patients referred with the clinical suspicion of an abdominal abscess, there is some clinical symptomatology or previous surgery in one specific area that makes one technique more advisable than the other.

In those cases where there is not a suspicious area, we should keep in mind the difference as pointed out by Dr. Winston.

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Bone Scanning in Neonatal Subcutaneous Fat Necrosis

Neonatal subcutaneous fat necrosis is a benign self-limiting disorder. The breakdown of fat results in the accumulation of crystals of fatty acids in the subcutaneous fat spaces of the infant. The fatty acids provoke a foreign-body reaction with a subsequent fibroblastic proliferation, deposition of calcium salts, and formation of bone. The roentgenographic manifestations are striking and consist of punctate aggregates of calcium in the subcutaneous fat. As a rule, the bone formed is masked by the extensive soft-tissue calcifications and is not visible on roentgenograms.

The purpose of this report is to illustrate and discuss the possible mechanisms for the extraskeletal accumulation of