99m HMDP and gallium-67 (^{67}Ga) citrate imaging in 130 patients with a painful orthopedic prosthesis, and their conclusion that the addition of ^{67}Ga scintigraphy greatly improved the specificity of bone scintigraphy alone. They state that "more recent techniques may prove superior to sequential Tc-Ga imaging" and in the summary allude to indium-111-(^{111}In) labeled leukocyte imaging as a possible such method.

We have previously reported on a series of 15 patients with painful prosthetic joints in whom both ^{67}Ga scintigraphy and ^{111}In-labeled leukocyte imaging were performed (*2*). The sensitivity for periprosthetic infection in this series was 50% for [^{111}In]leukocytes and 83% for ^{67}Ga scintigraphy. Specificity figures were 100% for [^{111}In]leukocytes and 78% for ^{67}Ga.

Although the numbers reported in our study were small, the results do not suggest that [^{111}In]leukocyte imaging is likely to produce a major increase in sensitivity of detection of periprosthetic infection. This is probably not surprising in view of the relatively low grade inflammation present in many patients with periprosthetic infection. We believe that the increased sensitivity of ^{67}Ga scintigraphy and the greater ease with which it can be performed make it preferable to [^{111}In] leukocyte imaging in patients with suspected periprosthetic infection.

References

1. Merkel KD, Brown ML, Fitzgerald RH Jr. Sequential technetium-99m HMDP—gallium-67 citrate imaging for the evaluation of infection in the painful prosthesis. *J Nucl Med* 1986; 27:1413–1417.
2. McKillop JH, McKay I, Cuthbert GF, et al. Scintigraphic evaluation of the painful prosthetic joint: a comparison of gallium-67 citrate and indium-111 labelled leucocyte imaging. *Clin Radiol* 1984; 35:239–241.

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REPLY: We appreciate the comments of McKillop and Gray on their experience with painful prosthetic joints. In our previously reported prospective study (*1*), the indium white cell scan proved to be significantly better than technetium-gallium imaging in a variety of musculoskeletal infections. In a subset of that study, 16 patients with painful prosthetic joints were examined. The indium leukocyte study had a sensitivity of 86% and a specificity of 100%, compared with the gallium scan which had a sensitivity of 57% and a specificity of 89%. Similar results were obtained when we performed a comparison between indium leukocyte scanning and sequential technetium-gallium scanning in loose and infected canine arthroplasties (*2*).

In other studies where indium leukocyte imaging was performed for the evaluation of painful prostheses without comparison to gallium-technetium scintigraphy, the results have been highly favorable. Propst-Proctor (*3*) reported 100% sensitivity and 100% specificity in seven cases. Mulamba and colleagues (*4*) in 30 patients reported a sensitivity of 92% and a specificity of 100%. Pring and colleagues (*5*) reported on 40 patients and had a sensitivity of 100% and a specificity of 89%.

The varying results with indium leukocyte scintigraphy reported in the literature clearly depend on a variety of factors including patient selection, the criteria for a positive diagnosis (whether pathologic proof or clinical evaluation), the interpretative criteria for the scan, the cell labeling technique, etc. In our institution, indium leukocyte scintigraphy has replaced sequential technetium-gallium scintigraphy in the evaluations of patients with suspected musculoskeletal sepsis.

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3. Propst-Proctor SL, Dillingham MF, McDougal IR, et al. The white blood cell scan in orthopedics. *Clin Ortho* 1982; 168:157–165.
4. Mulamba J, Ferrant A, Leners N, et al. Indium-111 leucocyte scanning in the evaluation of painful hip arthroplasty. *Acta Orthop Scand* 1983; 54:695–697.
5. Pring DJ, Henderson RG, Keshavarzian A, et al. Indium-granulocyte scanning in the painful prosthetic joint. *Am J Roentgenol* 1986; 146:167–172.

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Calculations in Feature Extraction of Space-Occupying Lesions

TO THE EDITOR: I read with interest the article (*1*) by Homma and Takenaka. The line $P_l = D_l$ as shown in Figure 2B should be geometrically perpendicular to the line connecting two points Pm_1 and Pm_2 as described in the fifth major processing step on page 1474. It does not appear to be so to the naked eye.

Also, according to the situation configured in Figure 2B, Eq. (3) should be

$$xm_2 = \frac{1}{N}\sum_{i=1}^{N} x_{l+i} \quad \text{instead of} \quad xm_2 = \frac{1}{N}\sum_{i=1}^{N} x_{l-i}$$

$$ym_2 = \frac{1}{N}\sum_{i=1}^{N} y_{l+i} \quad \text{instead of} \quad ym_2 = \frac{1}{N}\sum_{i=1}^{N} y_{l-i}.$$

If one tries to examine the genesis of the Eq. (4) for the calculation of distance D_l, the correct form of Eq. (4) should be

$$D_l = \frac{[ym_2 - ym_1)/(xm_2 - xm_1)]\cdot(xm_1 - x_l) + Y_l - ym_1}{\sqrt{[(ym_2 - ym_1)/(xm_2 - xm_1)]^2 + 1}}.$$

In addition, the term "countour line" in Figures 3 and 4 should be "contour line."

Reference

1. Homma K, Takenaka E. An image processing method for feature extraction of space-occupying lesions. *J Nucl Med* 1985; 26:1472–1477.

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REPLY: In Figure 2(B), although readers cannot geometrically see the distance D_l as a perpendicular line, I wrote a standard sign L for the indication of perpendicular in the figure. The distance D_l, or its absolute value: $| D_l |$, is the length of a line which is geometrically perpendicular to a line connecting two points—P_{m1} and P_{m2}, and was calculated in accordance with the five major steps described in our manuscript. The other points raised are misprints and Dr. Arora is correct in calling them to the readers' attention.

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Correction: Table of Contents, *J Nucl Med* 1987; 28

In *J Nucl Med* March 1987; 28, the entry in the Table of Contents for the article "Chemical Breakdown of Technetium-99m During Nebulization" should list as authors D.L. Waldman, D.A. Weber, G. Oberdörster, S.R. Drago, M.J. Utell, R.W. Hyde, and P.E. Morrow.