the imaging of medullary thyroid carcinoma. *J Nucl Med* 1986; 27:1150–1153.

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REPLY: We appreciate the opportunity to reply to the letter of Hilditch, Murray, McLellan et al. in which they report continuing limited success with [^{99m} Tc](V)DMSA for imaging patients with medullary carcinoma of the thyroid (MCT).

We would disagree somewhat with the authors' interpretation of their own data, as three of four patients reported demonstrate uptake of [^{99m} Tc](V)DMSA, namely Patients 1, 2, and 3. Uptake in Patient 3 is much less than seen in Patients 1 and 2 but the authors do not comment on the volume of tumor resected from this patient. We would agree that Patient 4 gave a false-negative result.

In our article (*1*) we, in fact, report uptake in seven out of eight patients imaged and not all patients as Hilditch et al. suggest. We would entirely support the statement that "the outcome of imaging is dependent on the state of disease" as microscopic foci of tumor would be unlikely to take up enough tracer to be successfully imaged. However, our experience now indicates that positive results can be obtained in patients with small volumed disease, although more false negatives are obtained in this subgroup.

In light of our further experience with [^{99m} Tc](V)DMSA we continue to believe that this agent can play a significant role in the management of patients with MCT, particularly in patients with local recurrence when successful repeat surgery can significantly prolong the disease free interval.

References

1. Clarke SEM. Lazarus CR, Wraight P, et al. Pentavalent (99m Tc) DMSA, (131 I) MIBG and (99m Tc) MDP—an evaluation of the three imaging techniques in patients with medullary carcinoma of the thyroid. *J Nucl Med* 1988; 29:33–38.

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Reproducibility of Hepatic Perfusion Index

TO THE EDITOR: We have read with interest the article by O'Connor et al. (*1*) on dynamic hepatic scintigraphy. We take issue with the comment "Parker et al. administered a 25 mCi bolus of ^{99m}Tc but failed to obtain good reproducibility in a study of eight patients" on the following grounds.

1. The author's name is Parkin.
2. We used sulfur colloid labeled with technetium.
3. We administered 3 mCi per patient not 25 mCi.
4. We carried out repeat studies on 12 not eight normal subjects and found a mean difference between paired observations of 17%.
5. On reanalyzing the data from 20 studies drawn at random using a second observer we found the degree of correlation between the two results was 0.94 and in no case was the change sufficient to alter the diagnostic result.

In retrospect we should, perhaps, have included some patients with abnormal Hepatic Perfusion Index in the group who had repeat scans but this, we feel sure, would have further improved the reproducibility since the major source of error is the poor statistics in the arterial component of the liver time activity curve. In patients with hepatic metastases, the statistics of the arterial phase are improved.

References

1. O'Connor MK, MacMathima P, Keeling PWN. Hepatic arterial and portal venous components of liver blood flow: a dynamic scintigraphic study. *J Nucl Med* 1988; 29:466–472.
2. Parkin A, Robinson PJ, Baxter P, et al. Liver perfusion scintigraphy—method, normal range and laparotomy correlation in 100 patients. *Nucl Med Commun* 1983; 4:395–402.

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REPLY: We thank Parkin and Robinson for their comments and would like to apologize for the typographical error in the spelling of Parkin and for incorrectly stating the administered dose used in their study (*1*). However, these facts do not change the substance of our statement that their study failed to show good reproducibility.

Parkin et al. stated that reanalysis of 20 studies showed little interobserver variation. Although it is not stated in their study, the upper limit of normal for the hepatic perfusion index (HPI) would appear to be 0.4. A cursory glance at their data shows that at least one subject had a change from 0.45 to 0.27 on reanalysis. Furthermore, in the normal subjects who underwent repeat studies, several subjects showed a large difference in the HPI which was sufficient to alter the diagnostic result from normal to positive or borderline positive. Their value of 17% for the root mean square difference between paired observations should be compared with a value of 4.4% obtained with Method 3 in our study (*2*). We would also refer readers to the detailed analysis of the method of Parkin et al. published by Tindale and Barber (*3*). They found that the HPI was dependent, among other things, on the extent of bolus smearing and the level of tracer extraction and concluded that this technique should be used with caution when interpreting abnormal values.

Despite this poor reproducibility of the slope based methods, Parkin and his co-workers (*1,4*) have clearly demonstrated that measurement of the relative contribution of hepatic artery to total hepatic blood flow may be a valuable technique in the detection of liver metastases.