

More on [^{99m}Tc](V)DMSA Scintigraphy in Patients with Medullary Carcinoma of the Thyroid

TO THE EDITOR: We have read with interest the letter by Hilditch et al. (1) in which they stated their continuing limited success with pentaivalent technetium-99m dimercaptosuccinic acid ([^{99m}Tc]DMSA) in patients with medullary carcinoma of the thyroid (MCT). We would like to report that our experience with this radiopharmaceutical has been very encouraging. We have performed ten studies in eight patients using [^{99m}Tc](V)DMSA prepared as previously described (2). Six of the patients were asymptomatic but had persistent hypercalcitonemia after thyroid resection for MCT, one patient was studied before and after total thyroidectomy and one patient before total thyroidectomy.

Scintigraphy was considered positive in seven patients and equivocal in one patient. Using cobalt-57 markers the areas of increased uptake were marked with an indelible ink. Biopsy (needle aspiration or surgical resection) of the sites of uptake confirmed MCT in the seven patients.

Our experience with this radiopharmaceutical is of particular interest because these patients were thought to have small volume disease with only mild hypercalcitonemia (0.13–43

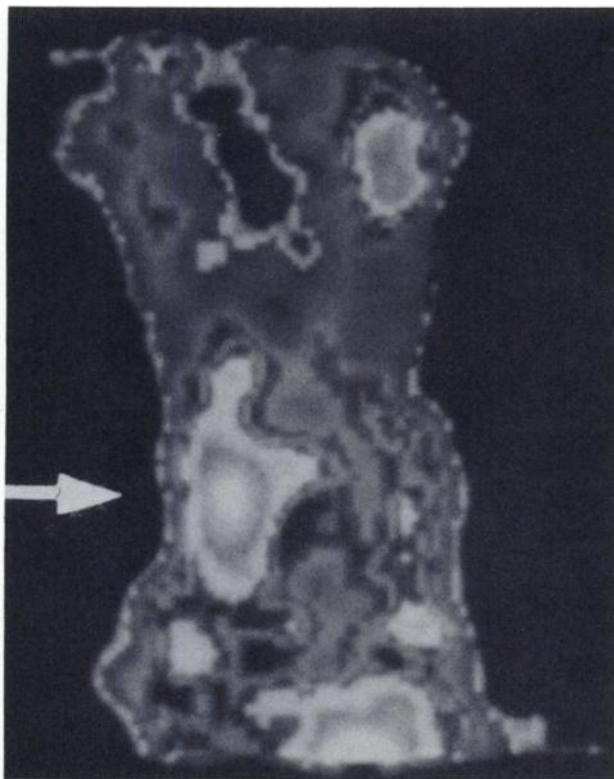


FIGURE 1
Pentaivalent [^{99m}Tc]DMSA image showing increased uptake in the right anterior neck (arrow), in a patient with rising calcitonin level (serial calcitonin peak: 2.6 ng/ml; normal range <0.08 ng/ml) 24 yr after right thyroid lobectomy for MCT. Repeat neck exploration and total thyroidectomy confirmed MCT. Anterior view.

ng/ml, normal range <0.08 ng/ml). Localized recurrence and distant metastases in soft tissue (Fig. 1) and bone (Fig. 2A) were detected in these patients. The early detection of occult tumor resulted in surgical resection (three patients) and early radiotherapy (one patient) (Fig. 2).

The reason for the failure of the technique as applied by the Hilditch group is not clear since quality control checks showed the presence of [^{99m}Tc](V)DMSA in the material administered to the patients (3). As they have suggested the outcome of imaging may be affected by the stage of the disease although other factors such as heterogeneity of MCT cells and the size and location of each tumor deposit have to be considered.

Our results clearly indicate that [^{99m}Tc](V)DMSA scintigraphy can be useful in the early diagnosis of recurrent or metastatic MCT including those with small volume disease.

References

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Carbon-11-L-Methionine Uptake with PET as a Predictor of Prognosis for Bronchogenic Carcinoma Patients

TO THE EDITOR: Fujiwara et al. (1) recently studied carbon-11-L-methionine uptake into lung tumor semiquantitatively. There was a significant difference in [¹¹C]methionine uptake between large cell carcinoma (3.98 ± 0.27) and squamous cell carcinoma (2.92 ± 0.03), and thus this measurement may be applicable for study and diagnosis of lung cancer.

According to the WHO histologic typing of the lung tumor, large-cell carcinoma includes giant-cell carcinoma (2), a rare variant of large cell carcinoma (3,4). It has been well-documented that giant-cell carcinoma is a more aggressive form of lung cancer than the more common bronchogenic carcinoma; (3–5) its rapidly fatal course is usually less than 1 yr in duration, with an average of 5 mo survival following initial diagnosis. In addition, the distinctive histopathology and rapid growth of bulky tumor warrant classification as a separate clinicopathological entity (3–6).

Methionine is one of the essential amino acids. The high accumulation of ¹¹C-L-methionine in the tumor seemed to

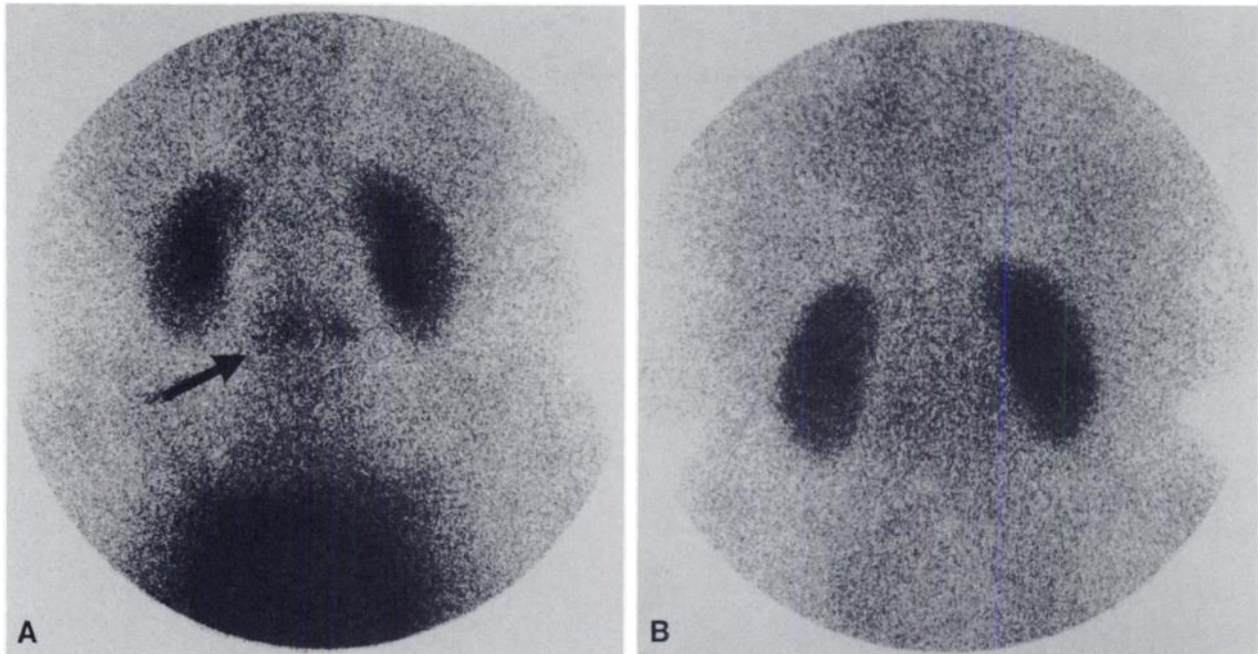


FIGURE 2
Pre- (A) and post- (B) radiotherapy scintigraphs in a patient (calcitonin level = 2.13 ng/ml) with uptake of pentavalent [^{99m}Tc]DMSA in the lumbar spine (arrow). Bone biopsy confirmed MCT. Anterior views.

result from the increased demand for amino acids for protein synthesis. Significant ^{11}C -L-methionine uptake in large-cell carcinoma may reflect its rapid growth.

Fujiwara et al. provide support for histologic classification of those large-cell carcinoma, and information from clinical course observations (1). If these five cases of large cell carcinoma belong histopathologically to giant-cell carcinoma, and if their rapidly fatal clinical course differs from that of other histologic types of lung cancer, the increased ^{11}C -L-methionine uptake in giant-cell carcinoma may enhance diagnosis and ultimately prognosis.

References

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REPLY: In reply to Dr. Shih's question, no patient in our study of large cell carcinoma had the variant giant cell carcinoma. The survival data of all patients were shown in Table 1. At last follow-up, all patients died except Case 3, and Case 4. The median survival of squamous cell carcinoma was 8 mo and that of large cell carcinoma was 15 mo. There was no difference of host survival between large cell carcinoma and squamous cell carcinoma (Generalized Wilcoxon test). However, there was a significant linear correlation between survival and the inverse of [^{11}C]methionine uptake ratio (DUR) in the dead group with a correlation coefficient of 0.831 ($p < 0.001$,

TABLE 1
Survival Data in Patients of Lung Cancer Studied with [^{11}C]Methionine

Patient no.	Cell type	Uptake of [^{11}C]methionine (DUR)	Survival from time of PET study (mo)
1	Large cell	4.52	19
2	Large cell	3.90	4
3	Large cell	3.89	15, alive
4	Large cell	3.81	41, alive
5	Large cell	3.79	3
6	Squamous cell	3.35	7
7	Squamous cell	3.32	5
8	Squamous cell	3.18	10
9	Squamous cell	3.03	2
10	Squamous cell	2.85	14
11	Squamous cell	2.77	6
12	Squamous cell	2.73	9
13	Squamous cell	2.64	8
14	Squamous cell	2.40	23
15	Small cell	2.00	36
16	Adeno	1.63	49