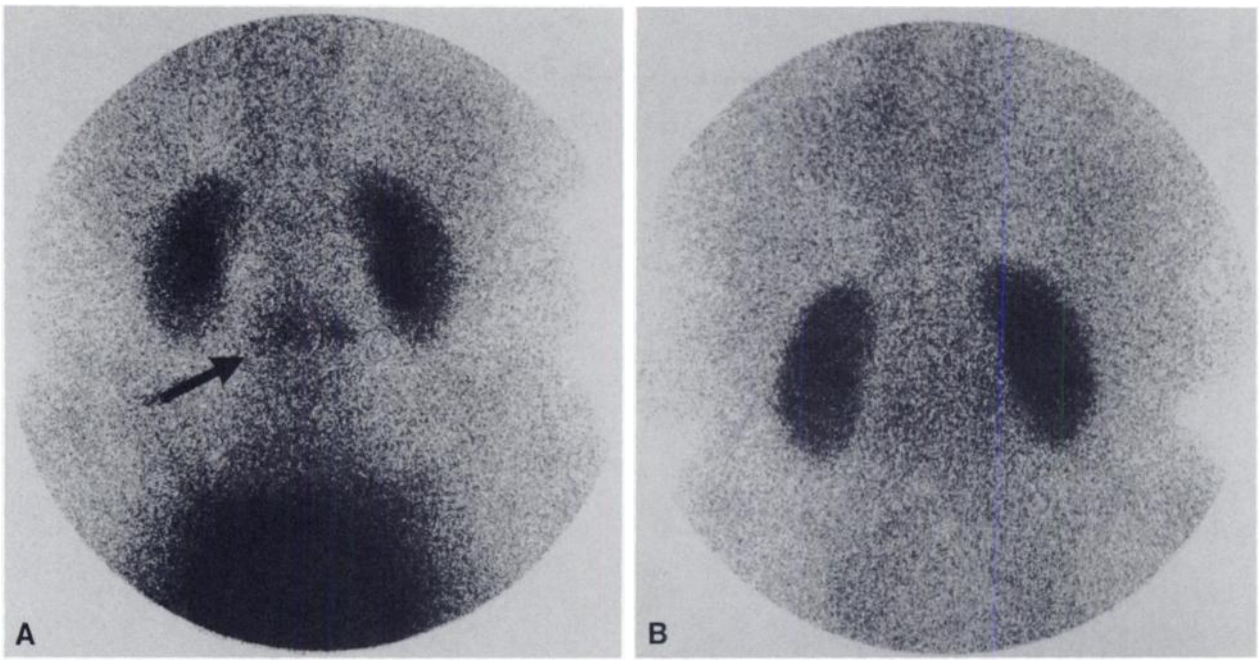


**FIGURE 2**
Pre- (A) and post- (B) radiotherapy scintigraphs in a patient (calcitonin level = 2.13 ng/ml) with uptake of pentavalent [$^{99m}$Tc]DMSA in the lumbar spine (arrow). Bone biopsy confirmed MCT. Anterior views.

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.

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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) | Surival 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 |

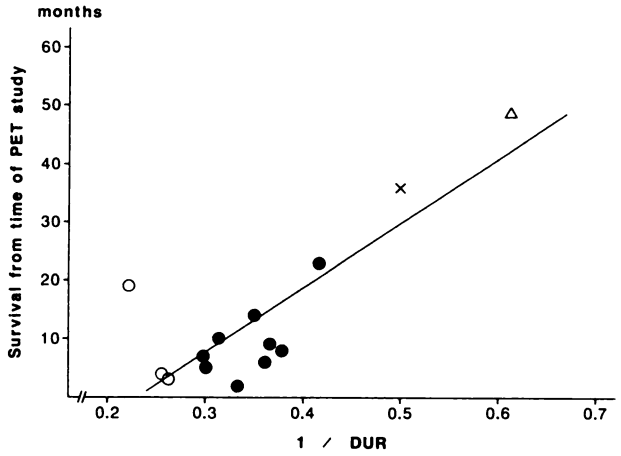


**FIGURE 1**
Relationship between survival from time of PET study and histologic type of primary lung cancer. (○) Large cell carcinoma; (●) squamous cell carcinoma; (×) small cell carcinoma; (△) adenocarcinoma. The correlation coefficient was = 0.831 ($p < 0.001$); intercept = −25.5; slope = 111.2.

Fig. 1). This suggested that the high accumulation of [$^{11}$C] methionine in the tumor seemed to be derived from the rapid tumor growth and represented the malignant nature of the tumor. Higashi et al. (*1*) reported in their gallium-67 ($^{67}$Ga) scan study of 74 patients that the greater the ($^{67}$Ga) accumulation in lung cancer, the shorter the host survival. Cheguillaume et al. (*2*) showed the correlation between the uptake of cobalt-57 bleomycin and the survival of 22 cases of lung cancer. Further investigation and a larger study group may verify the trends suggested by our preliminary work.

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## Captopril Test in Screening Hypertensive Patients

**TO THE EDITOR:** Perhaps Cuocolo et al. (*1*) do not have to contend with Italian versions of DRGs, cutthroat/cut-rate/low bid HMOs, or patients with marginal medical financial reserves. Nuclear medicine physicians in the United States, however, must consider these factors and be ever vigilant to minimize costs and thus maintain a competitive edge with other imaging methods. This has become even more difficult as advancing nuclear medicine technology and, *pari passu*, better trained technologists have forced up costs.

A screening test must be sensitive, rapid, and relatively inexpensive. As proposed by Cuocolo et al., the Captopril/DTPA renogram meets only two of these criteria. At my facility, a renogram costs a total of $200.00, including the hospital charge, isotope, and the physician's fee. As suggested in the article, two renograms (one without and one with Captopril) would result in a charge of $400.00. This is beyond the pale for a "screening test".

I would like to propose a cost-saving measure: reverse the order of performance of the renograms; that is, do the Captopril renogram first. If this is abnormal (e.g., low GFR, asymmetric function, etc. . .), then the "baseline" study can be performed, if desired. If the Captopril renogram is normal with symmetric function (this would include most patients since essential hypertension is much more prevalent than renovascular hypertension), then the baseline study would not have to be done. Reversing the sequence of tests thus would save a considerable amount of money and make use of the Captopril/renogram as a screening tool much more likely by the clinicians.

### Reference

1. Cuocolo A, Esposito S, Volpe M, et al. Renal artery stenosis detection by combined Gates' technique and Captopril test in hypertensive patients. *J Nucl Med* 1989; 30:51–56.

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**REPLY:** We thank Doctor Daly for his interest in our work. We would like to point out that our paper (*1*) was primarily a scientific study, and we made no pretense of evaluating the cost-effectiveness of the test. However, we concur that a screening test must be sensitive, rapid, and relatively inexpensive. When the radionuclide renography was first introduced into clinical use, it appeared to be an ideal method for evaluating patients with suspected renovascular disease (*2*). Subsequent reports have shown that the true-positive rate for the detection of renovascular disease with radionuclide renography is 80–90% (*3*). This true positive rate, which implies that ~10% of patients with renovascular hypertension will be missed by this test as false-negative results, is probably acceptable in clinical practice (*4*). But the false-positive rate for the test (~10%) is not acceptable (*5*).

It has been recently demonstrated that the introduction of Captopril scintigraphy will greatly improve the efficacy of the radionuclide renography in the differential diagnosis of renovascular hypertension (*1,6*). The observation made in our study (*1*) confirms previous reports in both experimental and human models (*6,7*) that angiotensin converting enzyme inhibition with captopril is capable of altering renal function assessed by radionuclide studies thus improving the diagnostic accuracy of these studies in the evaluation of patients with suspected renovascular hypertension. The potential for using Captopril, therefore, would be a marked improvement in the use of nuclear medicine techniques for screening through increased specificity. This benefit was clearly analyzed by Blaufox and Freeman (*4*). Finally, Doctor Daly's proposal to reverse the sequence of the renograms has merit as a good