initially," it appears that either the data or the statement are contradictory. Compare the data, lines 2 and 3, which show that 3.0 mCi and 1.5 mCi Tc-99mO_4 were used in the reactions, respectively. Using 3.0 mCi, recovery was 39% Tc-99m HSA and using 1.5 mCi, the recovery was 14.4% (calculation method shown above). This certainly appears to be a direct relationship and not an inverse relationship relative to the quantity of Tc-99mO_4 used initially. Or perhaps I am interpreting the data incorrectly?

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REFERENCE

1. PETTIT WA, DELAND FH, BENNETT SJ, et al: Improved protein labeling by stannous tartrate reduction of pertechnetate. *J Nucl Med* 21:59-62, 1980

Reply

Dr. Stern is correct that Table 1 (*1*) contains a typographical error in the column headed "Specific activity" and should read "μCi/μg."

As Dr. Stern has also pointed out there are apparent discrepancies in the percent incorporation of starting activity (i.e., $^{99m}TcO_4^-$) into protein. The activity used represents the amount of activity drawn and calibrated by the clinical staff for our use. Preparation for and actual labeling often required 2-3 hr before a final reading of the activity associated with protein was obtained and the omission of a decay correction factor is an oversight on our part. In most cases percent incorporation was determined by counting the 0.5 ml fractions obtained from the small column as well as the column itself and summing these readings. The activity in fractions 7-13 (containing the labeled protein) was summed and divided by the total activity (total fractions plus column) to obtain percent incorporation. We would like to clarify that not all labeling results fell within the 20-60% range, but typically this could be expected.

The data presented in Table 1 were selected for potential clinical utility. Results for labeling were variable at all levels of activity. Unfortunately we have not been able to define or control these factors that produce the variability in the labeling results, especially when activity in the mCi range was used. A number of labelings were carried out using 100-500 μCi. The results of these studies, although not included in Table 1, prompted our statement regarding the inverse relationship between the amount of activity used for labeling and the amount incorporated. Again this relationship was not a precise mathematical one but rather a general trend.

The Sephacryl S-200 column assay used has been described elsewhere (*2*) and was routinely performed within 0.5 hr following the labeling procedure. Exceptions to this routine assay were related to binding and stability studies: (a) In order to detect transfer of the radionuclide from one protein to another, IgG was labeled and mixed with a large excess of HSA and allowed to stand for 1 hr before the assay. These results were given in Fig. 2. Figure 1 illustrated a routine assay of our labeled HSA. (b) The serial assays at 0, 4, and 20 hr were performed to estimate the rate of loss of the radionuclide from the protein. Although these results were not depicted by a figure in our paper, a copy of the results can be obtained by writing the senior author.

We thank Dr. Stern for his comments regarding our data and hope that this letter provides sufficient clarification of our results and their interpretation.

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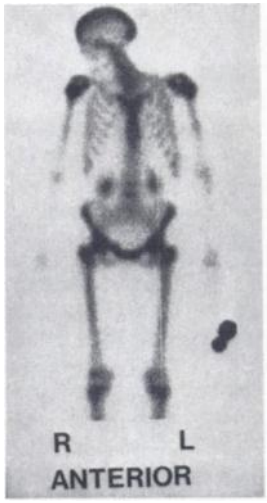
REFERENCE

1. PETTIT WA, DELAND FH, BENNETT SJ, et al: Improved protein labeling by stannous tartrate reduction of pertechnetate. *J Nucl Med* 21:59-62, 1980
2. PETTIT WA, DELAND FH, PEPPER GH, et al: Characterization of tin-technetium colloid in technetium-labeled aluminum preparations. *J Nucl Med* 19:387-392, 1978

Pitfalls of Absent or Faint Kidney Sign on Bone Scan

Detection of osseous abnormality by bone imaging depends upon the recognition of the areas of above-normal and/or asymmetrical tracer concentration. Diffuse symmetrical involvement of the axial skeleton may not be recognized unless one reviews a radiograph of the axial skeleton at the time the scan is interpreted (*1*). Sy et al. (*2*) observed faint or absent renal activity at the time of bone imaging when there was diffuse metastatic involvement of the axial



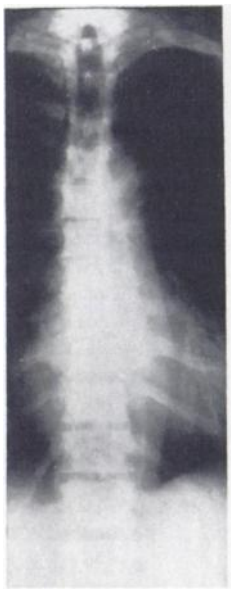


FIG. 1. (left) This 61-year-old white woman was admitted with palpable right breast mass and anemia. For the past 5 yr she had been treated intermittently with Leukeran for chronic lymphocytic leukemia. Breast biopsy revealed infiltrating duct carcinoma. Bone-marrow biopsy showed metastatic adenocarcinoma. Her skeletal survey was consistent with diffuse osteoblastic and lytic metastatic disease of axial skeleton. Technetium-99m MDP bone imaging, performed as part of metastatic workup, demonstrates diffuse increased uptake in axial skeleton, with no abnormal soft-tissue activity. Both kidneys are well visualized. Blood chemistry revealed BUN 15 mg/dl, creatinine 1.1 mg/dl, and alkaline phosphatase 304 U.

FIG. 2. (right) Radiograph of spine and pelvis shows diffuse osteoblastic and lytic lesions consistent with metastatic disease.