nuclear medicine use, failure to identify and quantify components will lead to misuse of the compounds, claims of in vivo instability which are not accurate, and incorrect internal radiation dose calculations.

WILLIAM C. ECKELMAN
POWELL RICHARDS
Brookhaven National Laboratory
Upton, New York

REFERENCES

1. LIN M, WINCHELL HS, SHEPLEY BA: Use of Fe(II) or Sn(II) alone for technetium labeling of albumin. *J Nucl Med* 12: 204–211, 1971

2. ECKELMAN W, MEINKEN G, RICHARDS P: The chemical state of ^{99m}Tc in biomedical products. *J Nucl Med* 12: 596–600, 1971

3. ECKELMAN W, RICHARDS P: High specific activity ^{99m}Tc human serum albumin. *Radiology*: to be published

AUTHORS' REPLY

Drs. Eckelman and Richards have enriched the armamentarium of investigators interested in technetium radiopharmaceutical development by their demonstration of the utility of gel chromatography in separating technetium-labeled constituents in various mixtures. Perhaps the single most useful aspect of this technology involves the separation of technetium-labeled materials which remain at the origin in methanol paper chromatography. Certainly gel chromatography could have been usefully employed in analyzing the Fe(II) and Sn(II) labeling procedures described in our paper. However, we doubt that such analysis would significantly alter our results or our interpretation of these results.

Most investigators in this field are aware of the fact that in the technetium labeling of albumin by any method, technetium activity not bound to albumin may be found at the origin in methanol paper chromatography. Whether such technetium represents hydrolyzed technetium (IV) or other as yet unidentified forms of technetium remains a moot point. As described in our paper, we found that much of the activity in an acidic pertechnetate-tin(II) mixture could pass an anion exchange column, but that virtually none of the activity could pass a mixed anion and cation exchange column. We interpreted this as an indication of the presence of a cationic form of the technetium in the mixture. When a small amount of albumin is added to such a mixture, the cationic form of the technetium may not quantitatively bind to the albumin. It is our feeling (without experimental verification) that some of the activity found at the origin in the paper chromatography may represent the unbound cationic technetium.

In our work, we also found that when a pertechnetate-tin(II)-albumin mixture at near neutral pH was passed through an anion exchange column, the activity recovered was almost entirely in a colloidal form. Subsequently, we found that the activity in the near neutral mixture itself already was quantitatively in a colloidal form. Indeed, these observations have led us to the development of a technetium-tin(II) colloid (*J Nucl Med* 13: 58–65, 1972). Our awareness of the presence of variable quantities of colloidal technetium in our preparations of the technetium-labeled albumin was the basis for performing the in vivo distribution studies shown in Table 5 of our paper.

Drs. Eckelman and Richards stated that the reaction was not "sufficiently fast" as we had indicated. The reaction time depends on the concentration of the tin(II) and the albumin and also on the desired labeling yield. Since we decided to incorporate a radiochemical separation step into our procedure, we were not interested in prolonging the reaction time for a technetium recovery from the column exceeding 90%. Therefore in this frame of reference, the reaction was "sufficiently fast".

Lastly, we would like to thank Drs. Eckelman and Richards for their interest and critical review of our paper. Only through such critical analysis of data can procedures emerge from the hands of investigators which can be reliably used by practitioners of nuclear medicine.

MAX S. LIN
H. S. WINCHELL
Donner Laboratory
University of California at Berkeley
Berkeley, California

IMPORTANCE OF PROPER BOWEL CLEANSING BEFORE ^{131}I WHOLE-BODY SCAN OR RETENTION STUDY

The importance of proper bowel cleansing before whole-body scanning with ^{85}Sr or ^{67}Ga is well established (*1,2*). Because 10–15% of the administered dose of these radionuclides is excreted from the body by the gastrointestinal tract, the accumulation of the tracer within the bowel may be mistaken for a lesion. In a similar manner, false-positive studies may result from the use of radioiodine scanning in the detection

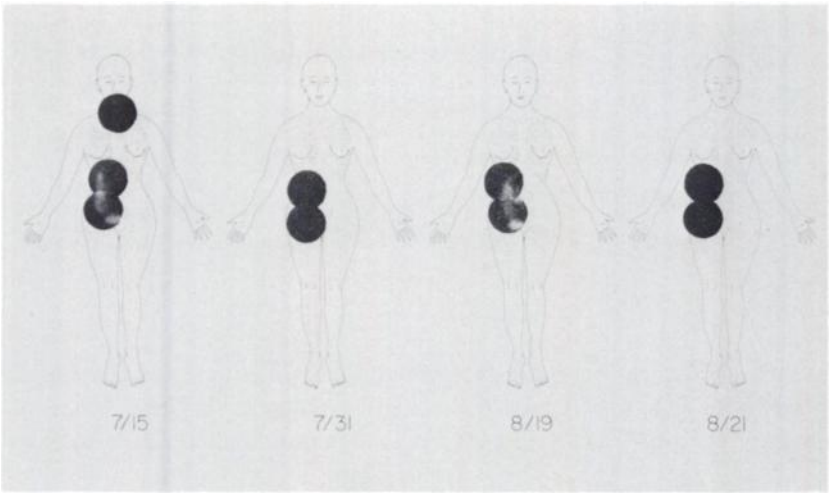

FIG. 1. Focal gastrointestinal accumulation of $^{131}I^-$ producing false positive study. Activity had cleared spontaneously by 18 days after administration of tracer (7/31) and immediately after laxative-enema therapy (8/21).

of functioning metastatic thyroid carcinomas (*3*) although this phenomenon is not widely recognized. This communication illustrates such a case.

Patient OW (08-52-55), a 27-year-old white female was evaluated by a whole-body scan and radioiodine retention study following a complete thyroidectomy and left radical neck dissection for papillary-follicular carcinoma of the thyroid gland in which 10 of 39 cervical lymph nodes were positive for metastatic tumor. Postoperatively, the patient was permitted to become hypothyroid with the PBI falling to 1.5 mg/100 ml compared with 7.3 mg/100 ml before surgery.

Following the oral administration of 1.0 mCi $Na^{131}I$, sequential whole-body measurements were performed daily for 1 week using an unshielded 5 × 4 in. NaI(Tl) scintillation crystal positioned 10 ft above the supine patient. At 48 hr a whole-body scintigraphy survey was performed with the gamma camera which revealed a cylindrical area of increased uptake in the right lower quadrant, as well as activity within the bladder (Fig. 1). There was no residual neck activity. The total-body retention of ^{131}I at this time, adjusted for the physical decay of the radionuclide, was 8% (in our experience, normal range for hypothyroid patients with no evidence of metastatic disease on the scintigraphic examination or on clinical followup is 1.7–5.9%). The uptake within the pelvis was suggestive of bowel contamination although a lesion within the ilium or liver could not be ruled out. Liver scan and x-rays of the pelvis were normal. At 96 hr the retention was 2.4% (normal, 0.1–0.6%). A repeat scan was performed 18 days after the administration of the tracer and showed no activity anywhere in the body.

Because of the equivocal nature of the examination, the study was repeated in an identical manner as before. At 48 hr the total-body retention was 9.4%, and the scan revealed diffuse uptake in the pelvis in what appeared to be ascending and transverse colon. To clarify this point the patient was treated with oral Dulcolax for 2 days and given an enema on the second day. The repeat scan showed complete disappearance of the abdominal activity, and the whole-body retention at this time was 0.4%.

Since a small percentage of orally administered iodide is excreted in the stool, diffuse activity in the gastrointestinal tract is commonly observed in ^{131}I retention studies. However, we have not previously noted focal collections in the ascending colon. In this patient, the bowel contamination was initially confused with a bone or liver metastasis and caused falsely high retention values. She had been made hypothyroid before the study, and the decreased bowel motility and stool volume may account for the unusual tracer accumulation. This was the first patient in whom the phenomenon was observed although many of our patients are comparatively hypothyroid. Because of the possibility of false positive studies, we now add a bowel cleansing regime to our routine protocol for these patients.

GERALD L. SCHALL
ROBERT TEMPLE
Department of Nuclear Medicine and National Institute of Arthritis and Metabolic Diseases
National Institutes of Health
Bethesda, Maryland

REFERENCES

1. HARBERT JC: Alarm over oral barium administration before bone scanning. *J Nucl Med* 10: 145–146, 1969

2. EDWARDS CL, HAYES RL: Scanning malignant neoplasms with gallium 67. *JAMA* 212: 1182–1190, 1970

3. SCHENCKER B, MARCARELLI JL: Fecal excretion of I^{131}. A pitfall in interpretation of body scans. *Amer J Roentgen* 90: 1059–1062, 1963