

REPLY

We appreciate the detailed comments of Dr. Harbert. In response to specific points:

1. The focal renal uptake at the lower pole of Cases 1 and 2 extends to the outer margin of the kidney; since the calyces do not extend to the renal margin, this suggests that the focal uptake is parenchymal.

2. In Case 1, the intravenous urogram (IVU) shows normal filling of upper, middle, and lower calyceal groups of the left kidney. We would not interpret this normal IVU as showing selective pooling of contrast in the lower pole calyces. An example of focal renal uptake due to pooling in a mildly obstructed upper calyceal group is shown in Fig. 1 below. Note that the focal renal uptake does not extend to the outer margin of the upper pole. This case was included in Table 1 of our report (1).

3. The full series of IVU films shows the left kidney of Case 1 to be rather mobile.

4. In Case 3, the focal renal uptake again extends to the renal margin, suggesting a parenchymal location.

5. In Case 3 the original scintigram shows concentration of uptake in the lower aspect of the right kidney; this did not reproduce well.

6. This was a retrospective study, and therefore serial scintigrams were not obtained. A prospective study is currently in progress.

7. Renal metastases from lung carcinoma occur in up to 17.5% of patients (2).

The additional cases of focal renal uptake reported by Drs. Vieras and Boyd are noted with interest. Unlike chelates, which are handled by glomerular filtration (3), polyphosphates are probably excreted as simple phosphates by the renal tubules (4). Hence, their behavior in the kidney may differ. We have recently reviewed the last 250 ^{99m}Tc -polyphosphate

bone scans done in our lab over the past 6 months. Eleven patients showed focal renal uptake outside the area of the renal pelvis: the focal uptake was in the upper pole in nine patients and in the lower pole in two patients. Nine of these patients had documented metastatic carcinoma. All patients had normal blood urea nitrogen and serum creatinine levels and urinalysis results. Only four patients had an IVU, but all four were normal. Histologic correlation is again lacking for this group: only two patients have succumbed to their disease to date, and autopsies were not performed. This group of patients is summarized in Table 1 of this letter.

It is interesting to note that subsequent scans showed disappearance of the focal renal uptake in two patients; both had excellent clinical response to chemotherapy started soon after the initial scans. A third patient also failed to show the former focal uptake on a repeat scan; a repeat IVU showed very poor concentration of contrast in the involved kidney, which had previously been normal.

An additional 15 patients showed focal uptake in one or both renal pelvis areas. Six patients had known primary carcinomas, but only four had documented metastases. Nine patients had benign disease. Five patients had an IVU, and all were normal.

These further data suggest that focal renal uptake outside the renal pelvis area, in the absence of gross obstruction or impairment of renal function, may be frequently associated with a variety of metastatic malignancies. Apparently, a small number of patients with non-neoplastic diseases may also show this finding. Focal renal uptake may simply indicate a renal effect of severe systemic disease, malignant or benign. This could be secondary to areas of renal ischemia or infarction, to some derangement in tubular phosphate transport, etc. We strongly agree that his-

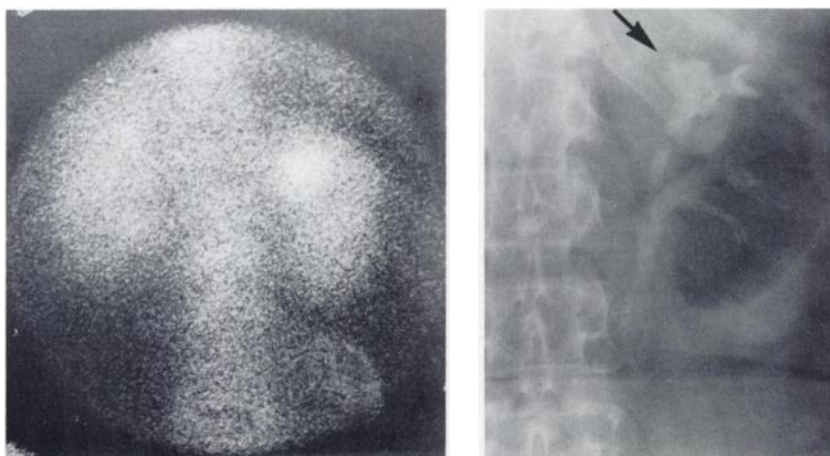


FIG. 1. Focal uptake in left upper pole, which does not extend to outer renal margin, is evident. Intravenous urogram clearly shows pooling of contrast in dilated upper calyceal group.

TABLE 1. ELEVEN PATIENTS WITH FOCAL RENAL UPTAKE

Metastatic Carcinoma (9 patients)	
lung	3
breast	3
prostate	2 (normal IVUs)
hypopharynx	1
No Documented Primary Neoplasm (2 patients)	
hypercalcemia of unknown cause	1 (normal IVU)
severe pelvic inflammatory disease	1 (normal IVU)

tologic correlation between scan and kidney is highly desirable, but it must be pointed out that the possibility of focal uptake in renal metastases was only

offered as a tentative explanation for an observed phenomenon.

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FOCAL RENAL ACTIVITY IN BONE SCANS (LETTER NO. 3)

I would like to comment on the article by P. M. Fitzner in the July issue of the *Journal of Nuclear Medicine* (1). Focally increased renal activity of ^{99m}Tc -labeled phosphorus compounds during bone scanning is not an infrequent finding in my experience. Initially I thought it was related to caliectasis; however, comparison with intravenous pyelograms, which were almost always obtained when this finding was present, revealed no abnormality in the majority of patients. I then started to obtain supplemental scintigrams of the kidneys after brief ambulation when I encountered this finding on bone scans; the focal uptake usually disappeared or was less conspicuous on these additional views. Therefore, I think now that focally increased renal uptake in patients with normal intravenous pyelograms reflects stasis, not apparent on the pyelogram, in an otherwise normal calix. If this finding has any clinical significance, it is not clear to me at the present time, but I assume it reflects only a "functional" variation

of normal. The detection of minor variations in urine flow by scan is not surprising if one recollects that changes in radionuclide concentration are detected more sensitively than changes in concentration of radiographic contrast.

Although the possibility of tracer uptake in renal metastasis from broncheogenic carcinoma cannot be entirely refuted in the individual case, I think that the author's observation represents only calyceal stasis of radioactive urine. It is probably only fortuitous that all three patients with this finding had metastatic broncheogenic carcinoma.

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REPLY

Dr. Winter has also observed focal increased renal activity in a number of patients. He notes that this finding is usually less evident after ambulation and feels that this represents a "functional" normal variation. Apparently, the focal renal uptakes does not decrease after ambulation in some patients. No mention is made of specific efforts to investigate this group of patients further. It would be of interest to

know the incidence of metastatic malignancy in this group of patients, compared to the group showing clearing of the focal renal activity after ambulation. Perhaps the focal increased renal uptake is not due to uptake in metastatic foci, but uptake of the phosphate bone-scanning compounds in primary and metastatic lesions is probably not rare (1).

A recent report presents two instances of focal in-