markedly different (i.e., less accurate) than the blood-pool time-activity ejection fraction (Table 1). Indeed, rather dramatic differences in interpretation result. The x-ray contrast method would classify 30% of the patients as abnormal, whereas the first-transit method would classify 80% as abnormal! The blood-pool figure would be 50%. Further detailed analysis is really not necessary to establish that—contrary to the author's conclusion—the two radionuclide studies cannot be equally accurate.

In medicine in general and in nuclear medicine in particular, we must be ever mindful of the significance of our numerical data. Statistical analysis must be used to clarify, validate, and exclude bias and the effect of chance. All too often more elegant and complex statistical approaches, if misused, only obfuscate.

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Reply

We have received the comments regarding the use of linear regression analysis and agree that this technique is frequently abused. We believe, however, that its use in the context of our article is correct. We were comparing the relationship between first transit and equilibrium blood pool methods to radiographic contrast angiography. By visual inspection of the plots which compare these two techniques to contrast studies, the correlation coefficient, and the standard error of the estimate, the relationship is similar for both techniques. The plots, two statements in the text, and the table clearly point out that the nuclear techniques underestimate ejection fraction (particularly the first transit technique) compared to contrast angiography. Thus, if the raw measurements are used, as the writers did, accuracy will appear to be worse with the first transit technique. The point, however, is this: since both techniques have a similar relationship to contrast angiography in terms of coefficient of correlation and standard error of the estimate, either technique may be used to predict the contrast ejection fraction with equal accuracy.

The exact reasons why nuclear and contrast techniques obtain different absolute values for the ejection fraction are complex and beyond the scope of this discussion. It should be noted, however, that the basis for accepting the contrast angiographic measurement of ejection fraction were studies done in this laboratory using linear regression analysis of contrast volume (*1–3*).

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Stomach Artifact in Bone Scintigraphy

Evaluation of 500 consecutive bone scintigrams revealed, in 11 patients (2.2%), localized uptake in the posterior region of the left lower ribs (Fig. 1). These shadows turned

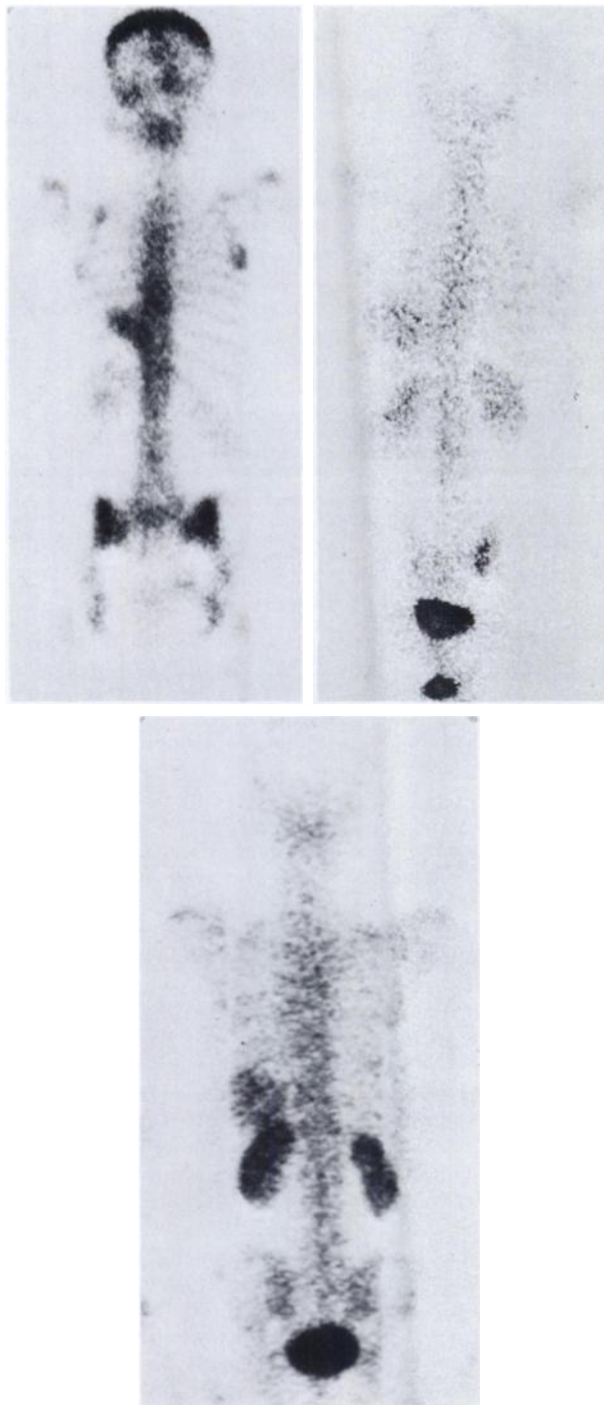

FIG. 1. Stomach artifacts; various degrees of uptake by stomach in different patients.

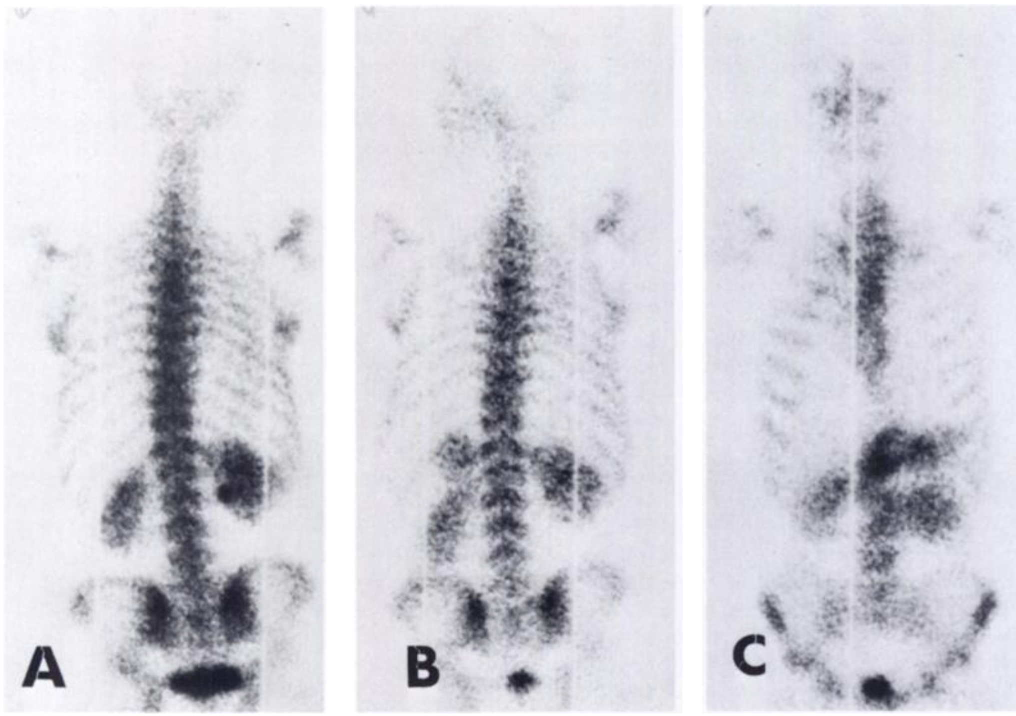

FIG. 2. (A) Uptake of pertechnetate by stomach after injection of 2 mCi of pertechnetate in case of normal scintigram. (B) Demonstration of stomach artifact in the posterior and (C) anterior views.

out to be stomach artifacts. This uptake was found with both Tc-99m diphosphonate (eight cases) and Tc-99m methylene diphosphonate (three cases). There was no extraosseous uptake in other patients investigated on the same day using the same vial of diphosphonate (DIP) or methylene diphosphonate (MDP). Only two of the 11 patients also showed thyroid uptake.

In eight patients it was possible to perform a repeat study, and it showed no gastric uptake. Four other patients with no abnormal uptake were injected with 2 mCi of [^{99m}Tc] pertechnetate after the completion of routine bone scintigraphy. Sequential scintigrams of the stomach region at 5-min intervals were made. The uptake in the stomach area appeared at 15 min and reached its height at 50 min. It corresponded in all aspects to the uptake observed in the 11 patients where it appeared unexpectedly. A normal bone scintigram after the injection of pertechnetate is shown in Fig. 2A.

Pertechnetate is known to accumulate in gastric mucosa (*1*) and this is assumed to be the reason for the appearance of a stomach artifact in bone scintigraphy. It is also possible that DIP or MDP accumulate in the stomach, but there is no proof for this.

Watson et al. have described metastatic visceral calcification in the stomach and lungs in a patient with marked hypercalcemia (*2*). Patients with chronic uremia show metastatic calcification that resolves after treatment (*3*). We have no information concerning the urea and calcium levels of our patients, but all of them were outpatients and in good clinical condition, and the eight patients on whom a repeat study was performed received no treatment.

Regardless of the mechanism involved, the possibility of stomach artifact should be recognized. It may mimic lesions in the ribs, or uptake in tumors of soft tissue (*4–6*). It is not a common finding, but when unrecognized may lead to inappropriate management of the patient.

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Vocal Cord Paralysis after Radioiodine Therapy

Although vocal-cord paresis may be seen in association with malignant or benign (*1*) thyroid disease or may follow