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REPLY

Drs. Moinuddin and Rockett call attention to the interesting parallel between our static images of a chemodectoma obtained with ^{99m}Tc-macroaggregated albumin and previously reported dynamic images of chemodectomas obtained with sodium pertechnetate. We do not think the pulmonary lesions in our case were chemodectomas since our reported findings show that the pulmonary lesions passed the albumin macroaggregates while the cervical lesion retained them. Furthermore, the pulmonary chemodectomas described by Korn et al, cited by Moinuddin and Rockett, were only large enough to be visible without the microscope in one case out of nineteen. In that one case, no lesions larger than 3 mm were described. The lesions in our case, on the other hand, ranged up to several centimeters in size. Their plain chest film appearance was very suggestive of arteriovenous malformations. The pulmonary angiogram showed typical arteriovenous malformations with large feeding arteries and draining veins and no tumor vascularity. Hence, it is extremely unlikely that these lesions represent anything but arteriovenous malformations.

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GALLIUM-67 UPTAKE IN THE REGENERATING RAT LIVER

Recently, Hill and Wagner (*1*) have reported that the uptake of ^{67}Ga in regenerating liver is similar to that in normal liver; they suggest that "^{67}Ga uptake is not related to hepatic cell proliferation associated with regeneration." While we do not disagree with this conclusion, we have observed considerable variation over the 72 hr after partial hepatectomy in ^{67}Ga concentration in the regenerating liver. Studies were taken 2 hr after intravenous injection of ^{67}Ga-citrate (*2*). Gallium-67 uptake was found to be maximal (about four times control levels) at 42 hr after operation and minimal (approximately 1.4 times control levels) during the period of stimulated DNA synthesis. Hill and Wagner confined their studies to this latter period.

In vitro studies with synchronized cultures of HeLa cells have also shown that ^{67}Ga uptake reaches a nadir at the time of most rapid DNA synthesis; maximum uptake of the nuclide was observed in the G_2 phase of the cell cycle.

Thus, while ^{67}Ga uptake does not appear to be directly related to cell proliferation per se, there do appear to be significant variations in the nuclide uptake at different stages of the cell cycle. In regenerating rat liver, there is a good correlation between variations in ^{67}Ga uptake and in lysosomal enzyme activity during the early regeneration period.

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TECHNETIUM LABELING OF STREPTOKINASE AT LOW pH

Having read the paper by Persson and Kampi (*1*) with interest, we would like to make a number of observations from our experience. Like Persson and Kampi, we found improved labeling of ^{99m}Tc-streptokinase at low pH values (pH 2–3). Labeling at high pH (pH 12) using a modification of the method of Dugan et al (*2*) gave labeling yields of more than 10%. Since the standard deviation of our analytic result was high with the G-25 gel-chromatography quality-control method, we preferred thin-layer chromatography (protein localization with ninhydrin combined with radiochromatogram scanning). The enzyme activity (activating plasminogen to plasmin) of ^{99m}Tc-streptokinase was found to be decreased at high pH.

In experiments with rabbits, ^{99m}Tc-streptokinase gave good results. However, the problem of antibody

production to streptokinase and the possible loss of its therapeutic activity prevented us from administering it to humans.

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REPLY

We were happy to learn of Dr. Hale's great interest in labeling and testing ^{99m}Tc-streptokinase. At pH 12 we obtained a labeling yield of 0–10% using the gel chromatography method of analysis. None of the thin-layer and paper chromatography methods we have used could separate ^{99m}Tc-streptokinase from reduced hydrolyzed ^{99m}Tc. Therefore, we prefer to use gel chromatography with Sephadex as the analytic method. The enzyme activity of labeled streptokinase was analyzed both by means of thrombin coagulation and immunoelectrophoresis. The enzyme activity of streptokinase was decreased both at extremely high and at low pH values. Thus, the optimal pH value for preparation of ^{99m}Tc-streptokinase lies between 4 and 7. With very few exceptions streptokinase was not used simultaneously for therapy and diagnosis at the hospital in Ostersund. However, the small dose of streptokinase (15,000–50,000 IU) used for the diagnostic procedure is not believed to affect the therapy, especially if treatment is started immediately after the diagnostic procedure.

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PREPARATION OF ^{68}Ga RADIOPHARMACEUTICALS

The August 1975 issue of the *Journal of Nuclear Medicine* contained an article by Donald J. Hnatowich (*1*). I wish to congratulate the author for a job well done. However, I feel that something is missing in his publication. The article gives the impression that this is the first "practical way" to prepare ^{68}Ga-labeled compounds from the ^{68}Ge–^{68}Ga generator, which it is not. The separation of ^{68}Ga from its complexed form was achieved almost 7 years ago by a simple procedure (*2,3*) applied to prepare "in situ" labeled macroaggregates for lung tomoscintigraphy (*4*) and colloids for liver–spleen studies (*5*). Eight years ago, Anghileri presented a method to prepare a compound for liver studies (*6*). Also, a review of the preparation of ^{68}Ga compounds for tomographic studies was published in January 1971 (*7*). The procedures described in the abovementioned papers are quite simple and safe to carry out, and it is surprising to see that the author did not list any of these references. These procedures were used during the 1968 to 1970 period, in combination with a Pho/Gamma II camera with the positron detector attachment.

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REPLY

The procedure referred to by Professor Colombetti has been used to prepare such labeled particles as ^{68}Ga-ferric hydroxide macroaggregates for lung studies and ^{68}Ga-ferric oxide colloids for reticuloendothelial imaging. The method is interesting in that the GaEDTA complex is separated not by anion