

and 72 hours after intravenous injection of 1.5-2.0 mCi  $^{67}\text{Ga}$ -citrate. The roentgenographic findings were evaluated according to the Internal Pneumoconiosis Roentgenography Classification. The study sample consisted of 15 cases of silicosis and 2 other forms of pneumoconiosis.

All cases of silicosis classified as a type  $p_2$ - $n_3$  demonstrated radioisotope uptake almost in the whole lung fields. Approximately

the half of these cases showed markedly increased deposit of  $^{67}\text{Ga}$ -citrate in the area of large conglomerate shadows appeared in the A and B lung fields. In almost all cases with bilateral hilar lymphadenopathy the uptake of  $^{67}\text{Ga}$ -citrate was clearly demonstrated in the area of affected hilar lymphnodes.

The remaining 2 other forms of pneumoconiosis classified as a type  $p_1$  did not reveal any  $^{67}\text{Ga}$ -citrate uptake in the lung fields.

### Evaluation of $^{67}\text{Ga}$ -Citrate Scintigraphy in Detecting the Tumors in Abdomen

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Clinical usefulness of  $^{67}\text{Ga}$ -citrate scintigraphy was evaluated in 13 cases with primary liver cancer, 23 cases with metastatic liver cancer, 25 cases with other malignant tumors and 8 cases with inflammatory diseases in the abdomen.

Seventy two hours after the injection of 1 to 2 mCi of  $^{67}\text{Ga}$ -citrate, tumor images were displayed on the polaroid camera integral with the scintillation camera, and the data were also stored in the memory of the 1600 channel analyzer using a  $40 \times 40$  array.

For the patients with liver or pancreas tumor, 100  $\mu\text{Ci}$  of  $^{198}\text{Au}$ -colloid or 200  $\mu\text{Ci}$  of  $^{75}\text{Se}$ -selenomethionine was injected, keeping them in the same position, immediately after taking quallium scintiphotos.

The two operations of "smoothing" and "restoring" were performed in the digital computer. Subtraction scintigram was obtained by subtracting  $^{198}\text{Au}$ -colloid or  $^{75}\text{Se}$ -selenomethionine activity from  $^{67}\text{Ga}$  activity in each matrix which were fed into the magnetic tape.

The excretion of  $^{67}\text{Ga}$  into the bowel and its distribution within the normal liver tissue make it difficult to delineate tumors in the abdomen.

Analysis of the abdominal scintiphotos with  $^{67}\text{Ga}$ -citrate in 78 patients of this series revealed positive scintiphoto in 92.3% of cases with primary liver cancer, in 39.1% of cases with metastatic liver cancer, in 44.4% of pancreas cancer and in 45.6% of cases with other tumors in abdomen.

With the subtraction scintigrams, positive findings were obtained in 100% of primary liver cancer and in 93.8% of metastatic liver cancer. These indicate computer processing is of great value. We obtained abnormal scintiphotos with  $^{75}\text{Se}$ -selenomethionine such as lower uptake or filling defects in all cases with pancreas cancer we studied. On the other hand, subtraction scintigram showed abnormal area in 85.7%. This indicate  $^{67}\text{Ga}$ -scintigraphy including computer processing is not useful in detecting pancreas tumor.