

in liver fractions (nuclei, mitochondria, microsomes and sap) indicated that no major difference was found between In-111 chloride

and In-111 bleomycin. This result indicates the release of free In-111 ions from In-bleomycin moiety in vivo.

## **The Diagnosis of the Head and Neck Tumors by Means of a Catheter Semiconductor Detector**

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A new method of making a diagnosis of malignant tumors of the head and neck region, by means of employing a catheter semiconductor radiation detector, which the authors have developed, after injection of  $^{32}\text{P}$  intravenously previously, is reported. As to the diagnostic efficiency, this method appears to be on equal basis with that of the biopsy

with added advantages. The catheter part of the detector is small enough that it could be inserted into most of ENT cavities; it could be applied repeatedly in different parts of the body without fear of causing metastasis, and in the midst of an operation the extent of the cancer involvement can be determined to which the removal may be necessitated.

## **Studies on Thymic Scintigraphy: Special Reference on Myasthenia Gravis**

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The thymic figure *in vivo* has been demonstrated by pneumomediastinography or thymic venography. The thymic scintigraphy was studied in this paper using both  $^{75}\text{Se}$ -selenomethionine and  $^{67}\text{Ga}$ -citrate. Nine patients of myasthenia gravis (4 was with thymoma, 4 was with thymic hyperplasia and 1 was with thymic adenocarcinoma) were studied their thymic uptakes of  $^{75}\text{Se}$ -selenomethionine before and after thymectomy, while only 3 patients of thymoma were studied with  $^{67}\text{Ga}$ -citrate before thymectomy. Thymic uptake of

$^{75}\text{Se}$ -selenomethionine was demonstrated in the patients with thymic hyperplasia and/or with thymoma except two cases (a case was thymic hyperplasia and the other was epithelial malignant thymoma who has a experience receiving the atomic bomb at Hiroshima in 1945).

The image of thymic cyst contained thymic adenocarcinoma was well figured out with  $^{67}\text{Ga}$ -citrate, and was coincided with extirpated tumor size and tumor figure. After extirpation of cystic tumor, a corresponded figure of

$^{67}\text{Ga}$ -citrate disappeared using  $^{75}\text{Se}$ -selenomethionine while normal thymic figure was obtained clearly.

The disappearance curve of  $^{75}\text{Se}$ -selenomethionine from circulating venous blood of the patients with myasthenia gravis indicated that the minimum level was obtained at 45 minutes after injection followed gradually increased  $^{75}\text{Se}$ -selenomethionine level.

The disappearance curve of  $^{75}\text{Se}$ -selenomethionine in mice was also studied with the same results. The organ distribution of  $^{75}\text{Se}$ -selenomethionine and  $^{67}\text{Ga}$ -citrate in mice were studied to prove thymic uptake in human. The maximum uptake in the thymoma

was obtained relatively short time, after e.g. 5 minutes, injection of  $^{75}\text{Se}$ -selenomethionine. On the other hand the maximum uptake of  $^{67}\text{Ga}$ -citrate into the subcutaneous Ehrlich' solid tumor could obtain at 72 hours after injection of  $^{67}\text{Ga}$ -citrate.

From above data, the authors considered that the optimum conditions to take thymic scintigraphy was 1) with 300  $\mu\text{Ci}$  of  $^{75}\text{Se}$ -selenomethionine, 2) from 30 minutes to 60 minutes after injection for thymic hyperplasia, and was 1) with  $^{67}\text{Ga}$ -citrate 2—3 mCi, 2) from 48 to 72 hours after injection for thymic tumor.

## Diagnosis of Lymphnode Metastases of Breast Cancer By Radioactive Colloids

(With Special Reference to Preoperative Exploration and  
Relapse-Detection)

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In breast cancer, approach to parasternal lymphnode metastases is not simple from surgical as well as radiodiagnostic standpoint. Roentgenologic lymphography of the parasternal nodes is difficult, if not impossible. In breast cancer patients we attempted scintigraphic exploration of this area with radioactive colloids including  $^{99\text{m}}\text{Tc}$ -sulfur colloid.

Radioactive colloid was injected deeply into upper anterior abdominal wall on each side of xiphoid process or subcutaneously into dorsum

of each hand or each anterolateral chest wall. In most cases 198 Au colloid (average size 30m $\mu$ ) was injected 100 $\mu\text{Ci}$  each site and scintigrams were obtained 24 hours later. Recently  $^{99\text{m}}\text{Tc}$ -sulfur colloid was also used (1 mCi each site after local anesthesia, scintigrams 2 hours later). The advantage of  $^{99\text{m}}\text{Tc}$ -sulfur colloid is lower radiation dose and better visualization of lymphnodes. When parasternal nodes were visualized equally on each side, we interpreted as normal pattern. Marked