

## A Preliminary Study of $^{169}\text{Yb}$ Scintigraphy of Lung Cancer and Other Diseases

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$^{169}\text{Yb}$  scintigrams in 22 patients with lung cancer (16 cases) and other diseases were reviewed.

One to 3 days after an intravenous administration of 2~500  $\mu\text{Ci}$   $^{169}\text{Yb}$ -citrate, scintigrams were obtained by either dual probe scanner or scinticamera. Positive results were obtained in 8 lesions (72.7%) out of 11 lung cancer patients before radiotherapy, and minimum diameter of these tumors was over 35 mm.

In a patient 10 months after irradiation with 6,000 rads, tumor recurrence was suspected in his fibrotic left upper field.  $^{169}\text{Yb}$  scan was positive, and the second course of radiotherapy was effective.

In another patient,  $^{169}\text{Yb}$  scan was positive. Left lower lobe was extirpated, the tumor revealed to be an epidermoid carcinoma. Macroautoradiogram of the sliced specimen showed marked but inhomogeneous densities over the tumor and faint densities around bronchial walls. Accumulations of radionuclide to the tumor and bronchial wall compared to that of lung parenchyma ranged 11.1~7.2 and 2.0 respectively.

In each case of pulmonary cyst, pulmonary infarction and radiation fibrosis,  $^{169}\text{Yb}$  scan was negative. Because of the marked accumulation of this nuclide to bones, one must be careful to evaluate the scintigrams in false positive cases.

## Tumor Scanning with Co-57 Bleomycin and Yb-169 Citrate in Head and Neck Malignancy

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Recently, many investigators have tried to find the tumor specific agent for diagnosis of malignant tumors. Also for head and neck malignancy, radioisotopic elements such as I-131 fibrinogen, Ga-67 citrate and Tc-99m compound have been introduced.

Maeda et al reported that Co-57 Bleomycin (BLM) can be used a radioisotopic scanning agent for diagnosis of a variety of human cancers, since, clinical application in Otolaryngology are investigated in our hospital.

Co-57 BLM was administered to 16 patients

with tumor which was diagnosed as malignant histologically, and was compared with Yb-169 citrate injection cases. Co-57 BLM 0.2mCi was injected to 4 patients who were treated by the arterial infusion through the polyethylen tube, in which was puted A. temporalis superficialis, and 0.5mCi was administered intravenously. Within 17 to 24 hours after injection, scintiphography was taken with Scintillation camera (PHO/GAMMA HP) New Clear Cicago.

**Result:** (1) 13 cases in 16 patients were obtained as positive image scintigraphies obviously. 3 patients who found a intensive necrotic tissue and received high irradiation were not showed radioactivity.

In histological classification, positive images were 10 squamous cell carcinoma, and malignant lymphoma, lymphoepithelial carcinoma and plasma cell cytoma, each 1 cases. (2) In this agent high radioactivity was found in only tumor tissue and characteristically in soft tissue tumor as compared with Yb-169 citrate. Tumor localization by this agent identified with X-ray photo findings and surgery views after the scintigraphical examination. The form of tumor and the inner construction in detail were suggested better than Yb-169 citrate. (3) There was compared scintiphoto by intra-arterial injection method with intra-venous method, but not different between them to diagnosis.

### The Comparative Study of Radioisotopes for Tumorscan Agents —on $^{67}\text{Ga}$ citrate, $^{169}\text{Yb}$ citrate, $^{57}\text{Co}$ -BLM and $^{203}\text{HgCl}_2$ —

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We have studied to clinical evaluation of  $^{67}\text{Ga}$  citrate,  $^{169}\text{Yb}$  citrate,  $^{57}\text{Co}$ -Bleomycine ( $^{57}\text{Co}$  BLM) and  $^{203}\text{HgCl}_2$  of which has been routinely used as tumorscan agents.

Preceding clinical evaluation of tumorscan agents, we inquired experimentally into the distribution of RI in whole body and tumor specimen.

RI-distribution and uptake over organs and tumor were investigated by means of macroradiography, microradiography and pulse hight analyser, which were performed by making use of mouse bearing Ehrlich tumor.

And RI-adhesionsrate to albumin was calculated by means of adding RI to human serum

albumin.

#### 1) $^{67}\text{Ga}$ citrate

The distribution to organs was more rich in liver, spleen and lung than in tumor, and the accumulation to tumor specimen was rich in cytoplasm. The uptake to tumor was 1.07%, and the adhesionsrate to human serum albumin was 35.11%.

#### 2) $^{169}\text{Yb}$ citrate

The distribution to organs was more rich in bone than in tumor, and the accumulation to tumor specimen was rich in near cell membrane.

The uptake to tumor was 2.08%, and the adhesionsrate to human serum albumin was 28.97%.