

The experimental animals were mice (DDN-strain) 14 days after transplantation of Ehrlich's tumor cell into the femoral region. Standard solutions was produced by mixing 10 μ Ci of each of the 3 radioisotopes such as ^{67}Ga -citrate (carrier-free), ^{111}In -chloride (carrier-free) and ^{75}Se -selenite (specific activity: 50 mCi/mg) 0.2 cc of standard solution was injected into the abdominal cavity of each tumor bearing mouse. The mice were sacrificed 48 hours after injection, and the tumor, liver, kidney, lungs, stomach, intestines and vertebrae (containing the bone marrow) were excised. The photo-peaks of the 3 radioisotopes in each organ were measured with a 200-channel multianalyser attached to a Ge (Li) semiconductor detector. The photo-peaks of ^{67}Ga , ^{111}In and ^{75}Se were measured at 182

KeV, 172 KeV and 136 KeV respectively. The uptakes of ^{67}Ga , ^{111}In and ^{75}Se by each organ were measured in comparison to the photo-peaks for the standard solutions. The following results were obtained A) ^{67}Ga -citrate is most readily incorporated into the tumor with ^{111}In -chloride and ^{75}Se -selenite having similar but lower uptakes, B) ^{67}Ga -citrate had the lowest kidney uptake. C) ^{67}Ga -citrate uptake by the bone (containing the bone marrow) was high whereas, uptake of the other isotopes was low. D) The other organs studied had similar uptakes for all three isotopes. The use of a Ge (Li) semiconductor detector made it possible to detect uptakes of ^{67}Ga -citrate, ^{111}In -chloride and ^{75}Se -selenite into the same tumor-bearing mouse at the same time.

Radiolymphadenography in Patients with Malignant Lymphoma Using ^{67}Ga -Citrate and $^{99\text{m}}\text{Tc}$ -Sulfur-Colloid

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^{67}Ga has been shown to have a high uptake in many soft tissue tumor, but it has, also rather high uptake in some normal organ and tissues. Scintiphotograph of abdomen, therefore, often presents difficult problems in interpretation.

Gelatin stabilized $^{99\text{m}}\text{Tc}$ -Sulfur-Colloid, following subcutaneous injection in the back of the feet, has been shown to give image of pelvic-abdominal lymphnodes.

In this report, we used both nuclides and compared both scintiphotoes.

Materials and Methods:

Scintiphotoes with ^{67}Ga -citrate 1-2 mCi were taken 48-72 hours after intravenous injection with Pho-Gamma III.

Scintiphotoes with $^{99\text{m}}\text{Tc}$ -Sulfur-Colloid, 2-3 mCi were also taken 2-4 hours after subcutaneous injection with local anesthesia.

Results:

Remarkable uptakes of ^{67}Ga were shown in lymphnodes of neck, mediastinum and axilla, in patients with malignant lymphoma.

Lymphnodes in pelvis and abdomen, however, could be rather hardly visualized, because of ^{67}Ga -activities of abdominal organs' and bowel, even in patients with malignant lymphoma.

Markedly decreased uptakes were seen after chemotherapy and or radiotherapy, and successfully, abnormal uptake was not seen.

Radiolymphadenography using $^{99\text{m}}\text{Tc}$ -sulfur-Colloid in normal case shows lymphnodes of inguinal area, pelvis, and para-aortic area, in the shape of inverted "Y" and this images well correspond to the lymphography with lipiodol.

In patients with malignant lymphoma, their scintiphoto varies according to the group of nodes involved and degree of involvement, such as absence or interruption, marked asymmetry, abnormal collateral lymphpathways and enlargement.

After treatment by drugs and/or radiation, normalizations on scintiphotoes were seen.

Normalization with both nuclides on scinti-

photoes is thought to shows successful treatments.

Conclusion:

For clinical diagnosis and follow-up of treat-

ed patient in malignant lymphoma, it is useful to use both ^{67}Ga -citrate and $^{99\text{m}}\text{Tc}$ -sulfer-Colloid for radiolymphadenography.

Diagnosis of Malignant Tumor by ^{75}Se -Selenite, $^{197}\text{Hg-Cl}_2$, and ^{67}Ga -Citrate

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In an attempt to recognize malignant tumor, the authors have used ^{75}Se -Selenite, $^{197}\text{Hg-Cl}_2$ and ^{67}Ga -Citrate.

Forty nine cases including 21 cases of lung cancer, 10 cases of other malignant tumor, 12 cases of inflammatory lesion and 6 cases of other disease have been scanned.

Good contrast between tumor and surrounding normal tissues was obtained in 14 cases of the lung cancers and 6 cases of the other malignant tumor. Four cases of the esophageal cancers showed negative scan. In all treated cases of the lung cancers, positive scan was not observed.

Of the cases with inflammatory lesions, one case of the pulmonary abscess showed a positive scan with $^{197}\text{Hg-Cl}_2$ and ^{67}Ga -Citrate.

Assays of the specimen of tumor obtained

at autopsy in one case with abdominal tumor yielded concentration of ^{75}Se 3.8 times the skeletal muscle level.

From a study on the distribution of ^{75}Se in the body, the authors assumed that a good scan can be obtained at 48 hours after injection.

When the nuclide was given to the patient with pulmonary lesion by intravenous and selective bronchial arterial infusion, it was observed that the nuclide showed the result of accumulation according to bronchial vascularity of the lesion.

On the course of treatment to the patients with lung cancer, scintigraphic and angiographic findings showed that the concentration of these nuclide in the tumor tissues reduced as the tumor decreased in size and vascularity.

Diagnosis of the Malignant Gynecological Tumor Using Selenite (^{75}Se)

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For the diagnosis of the malignant gynecological tumor, Sodium Selenite (^{75}Se) was used. 24 hours after the intravenous injection of ^{75}Se of $9\ \mu\text{Ci/kg}$, the abdominal local of

the patient was scanned.

Two positive cases of the scintigrams were obtained among 5 cases of the cancer of the uterus.