

Gallium-67 Scans and ^{99m}Tc Bone Scans in Children with Solid Tumors

H. ISHIDA*, A. JUJO*, Y. ITO*, H. IKAWA*, M. INOUE*, T. FUKUMOTO** K. OMORI** and K. ISHII***

**Department of Surgery, Tokyo Metropolitan Kiyose Childrens Hospital*

***Department of Radiology, Tokyo Metropolitan Kiyose Childrens Hospital*

****Department of Surgery, Kitasato University Hospital*

188 ^{99m}Tc bone scans and 118 gallium-67 scans were carried out in 95 and 69 pediatric patients respectively, ranged from 1 months old to 15 years old. 66 patients of them had solid tumors. 49 had malignant tumors (17 neuroblastomas, 7 ganglioneuroblastomas, 6 malignant lymphomas, 4 sarcomas, 3 hepatoblastomas, 3 embryonal carcinomas, 3 Wilms' tumors, 3 malignant histiocytosis, 2 malignant sacrococcygeal teratomas and one malignant thymomas) and 17 had benign tumors.

Of 34 patients with malignant tumors studied by gallium-67 scans before surgical operation, pathological accumulation were found in 29 patients, ca 85%, but in none of 9 patients with

benign tumors.

25 patients with malignant tumors were studied by ^{99m}Tc bone scans before surgery. 17 patients of them, 68%, had pathological accumulation in the scans and 5 of 17 patients had in malignant tumor itself.

Five patients with benign tumors excluding bone tumors did not show any accumulation in bone, except one case of teratoma who had positive finding in bony substance of tumor itself.

From our experience it is conceivable that gallium-67 scans and ^{99m}Tc bone scans are useful as the preoperative routine examination and the postoperative follow-up of the tumors in children.

Clinical Evaluation of ^{67}Ga -Citrate Scintigraphy to Hilar Metastatic Lesions in Lung Cancer

Michiaki FUKUHARA*, Hideaki MIYASHO*, Akimitsu KAMITSUNA*, Masahiro SASAKI**, Yoshitaka KATO**, Shizutomo KATSUTA** and Motomu KODAMA***

**Second Department of Internal Medicine, **Department of Clinical Radiology,*

****Second Department of Surgery, Hiroshima University, School of Medicine, Hiroshima*

This study was performed to evaluate whether ^{67}Ga -citrate scintigraphy was useful or not to detection of metastasis of hilar and mediastinal lymphnodes in lung cancer.

Subjects observed totalled 87 cases which were classified; 53 cases which were examined existence of metastatic lymphnodes in hilum and mediastinum by surgical operation, 22 non-operation cases with small cell carcinoma which were highly suspected some metastasis in hium, 12 cases which were suspected metastatic hilar lymphnodes on the chest X-ray film.

In 27 cases which were confirmed metastasis of hilar and mediastinal lymphnodes (N^+) by surgical operation, 8 cases (29.6%) showed no

accumulation of ^{67}Ga -citrate in mediastinal region. In 26 cases which were confirmed no metastasis of hilar and mediastinal lymphnodes (N^-) by operation, 8 cases (30.8%) showed sbnormal concentration of ^{67}Ga -citrate in mediastinal region. The former were false negative cases and the latter were false psotive cases.

One case (7.7%) in 13 cases which were confirmed N^+ by operation and chest X-ray film, showed no metastatic deposit of ^{67}Ga in mediastinal region. On the other hand, 7 cases (50%) in 14 cases which were confirmed N^+ by operation and N^- on the chest X-ray film, showed false negative sign.

In non-operation cases with small cell carti-

noma one case (4.5%) of 22 cases was false negative case.

In 12 cases which were suspected metastatic hilar lymphnodes on the chest X-ray film, 2 cases (16.7%) showed no accumulation of ^{67}Ga .

From the above results, it was suggested that ^{67}Ga -citrate scintigraphy was rather difficult to diagnose small metastatic lesion in hilum or

mediastinum, because false negative cases and false positive cases were frequently observed in surgical operation. However, few cases which showed false negative sign were observed in advanced inoperable cases. It was considered, therefore, ^{67}Ga -citrate scintigraphy was useful to determination of the field of irradiation on hilum or mediastinum in the inoperable cases.

Gallium-67 Scanning in the Evaluation of Therapy of Lung Cancer

T. HIGASHI, A. SHIMURA*, M. KANNO*, K. NAKAMURA**, H. KATO**,
S. SUZUKI*** and K. WATANABE***

**Kanagawa Dental College, Department of Radiology*

***Yokohama Keiyu Hospital, ***Kawasaki Ida Hospital*

The relationship between ^{67}Ga accumulation and effectiveness of radiation therapy was studied. The study population consisted of 76 primary lung cancer patients.

The histological diagnosis in the cases in which the Gallium-67 scan was performed is as follows: 20 cases of anaplastic carcinoma, 35 cases of squamous cell carcinoma and 21 cases of adenocarcinoma.

Carrier-free ^{67}Ga -citrate (2.0–3.0 mCi) was administered intravenously 48 hours before scanning and Gallium-67 scans performed prior to treatment.

Result

1) In reference to histologic types, the anaplastic carcinoma showed the highest density Gallium scan next, the squamous cell carcinoma showed an intermediate density and the adenocarcinoma showed the lowest density Gallium scan.

2) In cases of carcinomas of the same histologic type, the cases that gave initially strongly positive Gallium scan tended to respond better to radiotherapy than those which were weakly positive.

Gallium-67 scans of lung cancer performed prior to treatment appear to be of value in predicting radiosensitivity of lung cancer.

The Gallium Scintigraphies with Diffuse Accumulation in the Lungs

Kazunori MORITA, Yoshihiko OSHIUMI, Chikashi NAKAYAMA,
Itsuma KAMOI, Yuichi ICHIYA, Keiichi MATSUURA

Department of Radiology, Faculty of Medicine, Kyushu University

Gallium scintigrams of 26 cases were studied in which diffuse abnormal thoracic accumulation of the radionuclide were seen. In 15 cases, abnormal diffuse densities were noted in chest radiographs correlating well with gallium scintigrams, but there were no corresponding abnormalities in chest radiographs of 11 cases.

In 4 of the latter group, bronchographies were performed prior to gallium scintigraphies. Scintigrams showed higher gallium accumulation in

accordance with the sites of trachea and bronchus. These facts suggest that bronchographic contrast media has significant effects on the accumulation of gallium in the lungs. 6 cases of normal chest radiographs had malignant lymphomas and received prolonged chemotherapy with VEMP or others. All of 6 patients had high fever, leucopenia, elevation of ESR, and positive CRP, at the time of gallium scintigraphy.

These clinical data suggest that these patient