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A STUDY OF SERUM IMMUNOREACTIVE CALCITONIN IN LUNG CANCER. T. Tanaka, M. Itabashi, M. Aoyama, T. Otani, M. Yamada, Y. Hayata. Research Division, Special Reference Laboratory Inc. Tokyo Medical College. Dept. of Surgery. Tokyo.

We measured serum immunoreactive calcitonin (iCT) in 70 patients with lung cancer and 40 normal control subjects. The iCT level in 70 patients with lung cancer varied from 40 pg/ml to 2000 pg/ml (mean  $193.7 \pm 241.8$  pg/ml) and was higher than values in the 40 normal control subjects (mean  $98.7 \pm 44.5$  pg/ml,  $p=0.02$ ). In our results, iCT values in patients with lung cancer before operation varied from 40 pg/ml to 2000 pg/ml ( $217.7 \pm 294.9$  pg/ml). After the resection they varied from 40 pg/ml to 375 pg/ml ( $152.2 \pm 85.4$  pg/ml), and iCT level in patients without chemotherapy was higher than values in the other groups. Moreover the patients with striking higher level iCT died within half year.

On the classification of cell type in lung cancer patients, the iCT level were: adenocarcinoma cell,  $183.8 \pm 83.0$  pg/ml; squamous cell,  $300.6 \pm 445.7$  pg/ml; small cell,  $228.1 \pm 115.1$  pg/ml; large cell,  $183.8 \pm 83.0$  pg/ml; and statistically four cell type groups was not significantly different.

It suggested that measurement of iCT were useful in the diagnosis of lung cancer.

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RADIO IODINATED MONOCLONAL ANTI-MELANOMA ANTIBODY O. Inoue, T. Irie, K. Ando, H. Ikehira, F. Shishido, Y. Tateno, T. Yamasaki, M. Wakabayashi\*, M. Taniguchi\*, K. Kasakabe\*\*, and S. Kawasaki\*\*, National Institute of Radiological Sciences, Chiba, \*Chiba University, Chiba, \*\*Tokyo Women's Medical College, Tokyo.

Two monoclonal anti-melanoma antibodies, IgM-A and IgM-B, were labeled with I-125 and evaluated on their biodistributions in B-16 melanoma bearing mice. While IgM-A is specific for B-16 mouse melanoma, IgM-B is cross reactive for common melanomas including human.

Labeled IgM was prepared by Iodogen method and purified by Bio gel P-6 column chromatography. Radiochemical yields were 90% and specific activity was 0.5 - 2 Ci/g protein.

Imaging study using  $\gamma$ -camera showed that both IgM-A and B had high melanoma uptake at 1 hr after injection. After 4 days, radioactivity in other tissues except for thyroid was disappeared and clear tumor image was obtained.

Labeled IgM-A showed high tumor uptake (6.6% dose/g) and high tumor/muscle ratio (about 30) at 1 day. Extremely heterogeneous intramelanoma distributions of IgM-A and B were showed by macro autoradiograms.

This heterogeneous distribution might be caused by such factors as microcirculation or amounts of exposed antigen within melanoma tissue. This monoclonal IgM-B may be useful for in vivo detection of human melanoma.

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UPTAKE OF Ga-67 AND HEPARAN SULFATE LEVELS IN THE LIVER OR HEART DAMAGED RATS. Y. Hama, T. Sasaki, S. Kojima, and A. Kubodera Faculty of Pharmaceutical Sciences, Teikyo University and Science University of Tokyo. Kanagawa and Tokyo

We previously reported that heparan sulfate (HS), an acid mucopolysaccharides (AMP S), appeared to play an important role on the mechanism of Ga-67 accumulation in tumor cells and inflammatory lesions. To obtain more information, *in vitro* Ga-67 binding percents with various AMP S were determined and the changed Ga-67 uptake in the experimental injured liver or heart and their HS contents were investigated.

The binding percent (radioactivity in the precipitate as a percentage of total radioactivity in the incubation mixture) of HS with Ga-67 was especially high (95% over) in comparison with other AMP S such as chondroitin sulfate -A (17%), -B (22%), -C (10%), hyaluronic acid (6%), and heparin (1% less). We investigated the relation between Ga-67 uptake and HS levels in rat livers treated with  $CCl_4$  or 2-acetylaminofluorene, and in rat heart treated with isoproterenol. In all case, the changing patterns of Ga-67 in these tissues were in good accord with those in HS content.

These results suggested that HS might be an acceptor for Ga-67 accumulation in tumors and inflammatory lesions.

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SCHEMATIC MODELS OF TUMOR AND LIVER ON ACCUMULATION OF Ga-67. A. Ando and I. Ando. The school of Allied Medical Professions, Kanazawa University. Kanazawa.

Proposed mechanisms of Ga-67 localization in tumor and liver were speculative and controversial, with much contradictory evidence.

From the previously described results of our experiments and other investigator's, we presumed the accumulation mechanism of Ga-67 to be as follows: Gallium-67 was transposed by acid mucopolysaccharides (and/or the sulfated carbohydrate chain of sulfated glycoprotein) into the cells of tumor and liver. In the case of liver cells, Ga-67-acid mucopolysaccharides were concentrated into the lysosome. In the tumor cells, Ga-67-acid mucopolysaccharides were hardly concentrated into the lysosome, but large amounts of them remained in the cytoplasm.

The lysosomal role in the accumulation of Ga-67 in liver became weak with the transformation of liver into the malignant tumor.

In the case of tumor tissue, concentration of Ga-67 was more dominant in inflammatory tissues rather than in viable tumor tissue, as there were large amounts of acid mucopolysaccharides in inflammatory tissue.