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THE EFFECT OF ANTI-TUMOR DRUG(ADRIAMYCIN) ON Ga-67 UPTAKE IN CULTURED TUMOR CELLS.
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It has been reported that the Ga-67 uptake into tumor cell decreased after radiation therapy or chemotherapy. However,the mechanism of decreased in Ga-67 uptake into tumor cell is obscure. In order to clarify this mechanism, we examined the relation between anti-tumor drug(adriamycin) and Ga-67 uptake into cultured tumor cells(MOUSE LEUKEMIA L5178Y). Tumor cells(1.5×10^5cells/ml) were suspended in the FISCHER's medium containing 10% horse serum and were incubated at 37℃. The uptake of Ga-67 into control cells had gradually increased during incubation with a concomitant cell proliferation. The rate of cellular proliferation following administration of adriamycin (0.1μg/ml) into cultured medium were diminished.However, the Ga-67 uptake of into tumor cell did not decreased. On the contrary,falling administration of adriamycin , the Ga-67 uptake into tumor cell gradually increased compared with control. From these results, we suspected that ,when administration was formed and this complex accumurate into tumor cell.

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MODEL FOR LUNG CANCER ON Tl-201 ACCUMULATION.
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Thallium-201 is used for tumor scanning of lung and thyroid. Tumor-affinity mechanism of Tl-201 have been earnestly investigated,but is not understood adequately. This study was carried out to further grasp the affinity of Tl-201 for lung cancer. Using Ehrlich tumor-bearing mice and Yoshida Sarcoma-bearing rats,tumor and organ uptake rates of Tl-201 was assayed. Tumor(gravity)-organ(gravity) concentoration ratios of Tl-201 was calculated. These ratios were belor one in the case of many organs except blood and brain.

On the other hand, weight of lung and lung volume in thorax of the above animals were determined.From these values, it was calculated that the specific gravity of lung in thrax of above animals was 0.1. In the case of the lung, tumor-organ concentration ratio of Tl-201 should be indicated as tumor(volume)-lung(volume) concentration ratio, beacause specific gravity of lung is abot 0.1. Concernig the lung, tumor(volume)-organ(volume) concentration ratio of Tl-201 were between 3.0 and 6.0 at various time intervals from 30 min to 48 hours after administration.
It was obvious from these experiments that this nuclide was very useful for the diagnosis of lung cancer.

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ACCUMULATION OF Ga-67 CITRATE INTO INFLAMMATORY LESION AND THE MECHANISM OF Ga-67-UPTAKE.
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Inflammatory lesion was induced in rats according to the method of s.c. injection of turpentine. Ga-67 citrate was injected to the rat. The uptake rates of Ga-67 into the lesion and normal tissues were assayed, and the distribution of Ga-67 was examined by macro and micro autoradiographies in the lesion as well as whole body autoradiography. From the observation by autoradiography, it was revealed that Ga-67 was avidly accumulated corresponding to the subcutaneous tissue infiltrated with neutrophils and macrophages, and this nuclide was concentrated intercellularly around these cells. And it became clear from biochemical study that Ga-67 was bound to the acid mucopolysaccharide(keratan polysulfate, etc.) in the lesion. On the other hand, capillary permeability in this lesion was much greater than that of normal tissues.

Based on the present results, mechanisms of Ga-67 uptake into inflammatory lesion are concluded as follow: accumulation of Ga-67 in the inflammatory lesion is primarily due to leakage of Ga-67 into the subcutaneous tissue infiltrated with neutrophils and macrophages through capillaries with increased permeability. In the inflammatory lesion, Ga-67 is preferentially bound to the acid mucopolysaccharides which compose intercellular substances.

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Ga-67 AND In-111 UPTAKE IN INFLAMMATORY REGION OF RAT.
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Uptake of Ga-67 and In-111 in inflammatory region of rat induced by turpentine or S.aureus was studied autoradiographically and histologically. Ga-67 and In-111 were administered in abdominal cavity of rat. 1, 3, 7, 14 days after subcutaneous injection of turpentine or S.aureus, scintigraphy and WBARG were carried out, and inflammatory region were excised. Excised specimen were compared autoradiographically and histologically each other. Uptake of Ga-67 and In-111 in inflammatory region increased with time and reached a plateau 3-7 days later. Polymorphonuclear leucocytes infiltrated in inflammatory region induced by S.aureus 1-3 days later, but 7 days later macrophages infiltrated. Whereas macrophages and polymorphonuclear leucocytes infiltrated by turpentine 1-3 days later. Ga-67 and In-111 were highly accumulated in the zone of marked cell infiltration.