

Tumor Imaging with ^{111}In Bleomycin

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Affinity of ^{111}In -bleomycin for malignant tumors of the rats and those of human beings were investigated.

The agents were injected intravenously to the rats with subcutaneous transplants of Yoshida sarcoma or ascitis hepatoma of AH 109A. They were sacrificed 1, 2, 3 or 5 days after injection. Tumor to muscle concentration ratio of Yoshida sarcoma was 5.8 and that of AH 109A was 7.1.

The whole body retention of the ^{111}In bleomycin at 24 hours after injection was about 1/3 the dose. 99 patients were investigated with ^{111}In bleomycin, including 75 cases

of primary tumors group, 14 cases of metastatic tumors group, 9 cases of screenings group and one case of false positive. The results were positive in 42.66% ($\frac{32}{75}$) in primary tumors group and 64.28% ($\frac{9}{14}$) in metastatic tumors group. 9 cases were also examined with ^{67}Ga citrate and all cases were positive.

Comparative studies were done with ^{57}Co bleomycin, $^{99\text{m}}\text{Tc}$ bleomycin, $^{111}\text{InCl}_3$ and ^{169}Yb citrate in several cases. The results appear to indicate that tumor imaging with ^{111}In bleomycin is prospective.

The Comparative Study of the Diagnostic Value of Ga-67 Citrate and Co-57 Bleomycin in Bronchial Carcinoma

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We have made an attempt to perform lung scans with Ga-67 citrate and Co-57 bleomycin in 19 cases with primary lung cancer. The images obtained from Co-57 bleomycin were compared with those obtained from Ga-67 citrate after an interval of one week.

Ga-67 scintigraphy was carried out at 48 and/ or 72 hours after the intravenous

injection of 2 m Ci of Ga-67 citrate. On the other hand Co-57 scintigraphy was recorded at 6 and/ or 24 hours after the intravenous injection of 500 μ Ci of Co-57 bleomycin. Both scintiphotos were obtained from a scintillation camera connected to a minicomputer.

Results: Co-57 bleomycin has been known to accumulate less in bone than Ga-67 citrate.

As a result a good visualization of Co-57 bleomycin was recorded in the central type of bronchial carcinoma.

In the case of lung cancer with accompanying atelectasis, the accumulation of Ga-67 was only in the focal lesion, while the distribution of Co-57 bleomycin was not only in the tumor area but also in the area of

atelectasis. In the follow up examination during Cobalt therapy, the accumulation of the two agents in the tumor areas was markedly decreased after the irradiation of 6,000 rads.

A significant difference in positive uptake of the two agents in the case of lung cancer was not in fact discerned.

Affinity of RI Labeled Bleomycin for Malignant Tumor

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Affinity of ^{67}Ga -bleomycin and ^{111}In -bleomycin for malignant tumor of the rats were investigated. The agents were injected intravenously to the rats that bore subcutaneous transplants of ascites hepatoma AH109A. They were sacrificed 1 or 24 hours after the injection. The radioactivity of the tumor, blood, muscle, liver, kidney, bone and spleen was measured by a well-type scintillation counter. Tumor to muscle concentration ratio of ^{111}In -bleomycin at 24 hours was 7.1 and that of

^{67}Ga -bleomycin was 11. Kidney to muscle ratio of ^{111}In -bleomycin was 13, liver or spleen were 6—7 and blood was 0.4. Kidney to muscle ratio of ^{67}Ga -bleomycin was 14, liver or spleen were 13—15 and blood was 3.0. The whole body retention of ^{111}In -bleomycin at 24 hours after the injection was about 1/3 dose, and that of ^{67}Ga -bleomycin was about 1/2 dose. The results appear to indicate that tumor imaging with ^{111}In -bleomycin and ^{67}Ga -bleomycin are prospective.

Tumor Scintigrams with ^{111}In -Chloride and ^{111}In -Bleomycinin Comparison with Those with ^{67}Ga -Citrate and ^{67}Ga -Malate

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One hundred and twenty tumor scannings were carried out with 4 kinds of so-called tumor seeking agents, such as ^{67}Ga -citrate (62 cases), ^{67}Ga -malate (30 cases), ^{111}In -chloride (14 cases), and ^{111}In -bleomycin (14

cases). When the efficiency of tumor visualization of one agent is compared to the other, it is a matter of course that the scintigram qualities should be assessed on the basis of whole body distribution of each