

Comparative Study of ^{111}In -Bleomycin Accumulation with ^{67}Ga -Citrate and ^{111}In -Chloride

Yasuhiko ITO, Tsuneji ICHIKAWA, Akira MURANAKA,

Tsuneo YOKOBAYASHI and Yoshinari IMAJO

*Department of Nuclear Medicine and Radiation Therapy Kawasaki Medical School
Kurashiki, Japan*

ABSTRACT

Tumor affinity of ^{111}In -bleomycin (BLM) was investigated with VX-2 rabbits and the patients with lung cancer.

As the basic approach for this study the following investigation were performed: 1) the clearance of BLM from blood was compared with that of $^{111}\text{In-Cl}_3$; 2) the distribution of BLM in various organs of VX-2 rabbits two days after administration was compared with that of $^{111}\text{In-Cl}_3$; 3) after simultaneous administration of BLM and ^{67}Ga into VX-2 rabbits the distribution of these two substances in organs was studied 2 and 3 days later; 4) the comparison was made of ^{67}Ga being contained in urine and feces; and 5) after injecting turpentine oil into the muscle the accumulation in the inflammatory site was compared with that of ^{67}Ga .

By administering BLM and ^{67}Ga to patients with cancer at the interval of about one week the ratio of radioactivity in the lesion to that in

the surrounding normal lung was estimated by setting ROI.

The clearance of BLM from blood required 14.5 hours while that of $^{111}\text{In-Cl}_3$ took 12 hours. The ratio of BLM in tumor to tissue was about the same as that of $^{111}\text{In-Cl}_3$ or slightly less. The ratio of tumor to muscle was BLM: 7.81, and $^{111}\text{In-Cl}_3$: 15.94. The clearance rate in tumor to blood was 2.68 with BLM and 3.58 with $^{111}\text{In-Cl}_3$.

As to the ratio of ^{67}Ga both 2 days and 3 days after administration of BLM ^{67}Ga showed a greater value in the tumor to tissue ratio. The tumor to muscle ratio was ^{67}Ga : 50.57, BLM: 10.40 two days later while 3 days later it was ^{67}Ga : 31.0 and BLM: 10.42. The excretion into urine and feces was less in ^{67}Ga .

With clinical cases the radioactivity accumulation is higher in ^{67}Ga .

From the above results the tumor affinity of BLM has been confirmed, but it seems not so high as to replace ^{67}Ga .

Comparison Between ^{67}Ga -Citrate and ^{111}In -BLM as the Tumor Scintigram

M. KUMANO*, Y. HIRATA*, K. NARABAYASHI*, T. UCHIDA**, T. KATSURA**,
Y. INOUE** and S. NISHIYAMA**

**Department of Radiology, Hyogo Cancer Hospital, **Department of Radiology,
Kobe University*

We examined tumor scintigrams using ^{67}Ga -citrate and ^{111}In -BLM in 34 patients diagnosed of malignancy, and compared them.

Method: Scinticamera images were obtained 48 and 72 hours after injection of 2 mCi (^{111}In -BLM) and 72 hours after injection of 2 mCi (^{67}Ga -citrate). Considering all cases the percentage of positive scintigrams had been 73% for ^{67}Ga and 68% for ^{111}In -BLM. There was not so large difference in ratio between them, however positive cases using ^{111}In -BLM were all accumulated using

^{67}Ga -citrate. Tumor scintigrams using ^{67}Ga -citrate showed more clearly activity in almost all cases than examined by ^{111}In -BLM. Extensively, only 3 cases (undifferentiated cancer of the neck of unknown primary origin and pulmonary cancer with pneumonia) took more clearly than ^{67}Ga -citrate. Tumor scintigrams could be accumulated at the head and neck and inguinal lesion of the malignant lymphoma, but tumor images of ^{111}In -BLM was not so clear as ^{67}Ga -citrate, the pulmonary and hepatic lesion clearly accumulated by