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COMPARISON BETWEEN THE DISTRIBUTIONS OF GA-67 AND I-131-HSA IN ABSCESS INDUCED RAT BY QUANTITATIVE WHOLE BODY AUTORADIOGRAPHY. S.Sanada, A.Ando, T.Hiraki, K.Hisada and K.Nitta. Kanazawa University. Kanazawa. Daiichi Radioisotope Labs.,Ltd. Tokyo.

We previously reported that Ga-67 was not accumulated in exudate, but inflammatory tissue. This study was undertaken to elucidate the influence of permeability of plasma from blood vessel in the inflammatory tissue.

At 3, 5 and 7 days after subcutaneous injection of 0.2ml turpentine to Wistar rats, I-131-human serum albumin (HSA) was injected intravenously to the rats. The rats were killed at 3hr after injection of I-131-HSA, and whole body autoradiography was carried out. The uptake rates in various tissues were obtained by densitometric analysis of autoradiogram.

The uptake rates of I-131-HSA in inflammatory tissue and exudate were 1.4~1.6% dose/g and 0.3~0.5 %dose/g, respectively. The distribution of I-131-HSA in abscess was closely similar to that of Ga-67, however, I-131-HSA uptake in exudate was a little higher than Ga-67 uptake.

These results showed that the permeability of plasma from blood vessel in the inflammatory tissue increase, and this cause the Ga-67 uptake.

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EFFECT OF IRON ON IN VIVO BEHAVIOR OF GA-67 IN INFLAMMATION BEARING RATS. H.Kohno, T.Suzuki, Y.Ohkubo and A.Kubodera*. Tohoku College of Pharmacy, Sendai. *Science University of Tokyo, Tokyo.

Iron influences the in vivo behavior of Ga-67 and this effect has been suggested to be due to the inhibitory action on Ga-67 binding to transferrin. A detail study concerning the effect of iron on the pharmacokinetics of Ga-67, however, has not been performed. In the present work, we studied the effect of iron on the pharmacokinetic parameters and biodistribution of Ga-67 using inflammation bearing rats. A 0.2ml volume of turpentine oil was injected into the femoral muscle of the Male Wistar rats weighing 150-220g and used 6 days later. Iron (1-8umol/kg) and Ga-67 (18.5kBq/rat) were simultaneously injected into the external jugular vein of urethane anesthetized rats. A repeated blood sampling was performed using a catheter inserted into the same vein. Iron accelerated the blood disappearance of Ga-67, and decreased the AUC value in a dose dependent manner. Iron also reduced the Ga-67 uptake by the liver, but not by the inflammatory lesions. These results suggest the usefulness of iron in an imaging for inflammatory diseases.

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BASIC ESTIMATION ABOUT THE QUANTIFICATION OF THE UPTAKE OF GA-67 IN THE LESION. K.Hayama, T.Eguchi, H.Takase and K.Maeda. Nippon Dental University, Niigata, Niigata.

Sugawara et al, Higashi et al, and others reported quantification of accumulation of Ga-67. It seems that these methods are left room for estimation. We investigate the method to calculate absolute amount of radioactivity. The purpose of this paper is to estimate accuracy of quantification of Ga-67 in soft tissue region.

All data which are obtained by changing diversely parameters of theoretical equation are collected. In order to confirm theoretical equation count rates of measurement are compared with count rates which are calculated theoretical equation. Theoretical values are compared with observed ones to estimate accuracy of quantification. Theoretical values are calculated with theoretical equation and observed values are obtained by measuring absolute amount of radioactivity.

Count rates of measurement are practically consisted with count rates of theory. There is little to choose between theoretical values and observed ones. Therefore this method of quantification is demonstrated in these studies.

After this we will investigate the application of this method to system contain bone region.

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QUANTITATIVE ANALYSIS AND CLINICAL APPLICABILITY OF GA-67 CITRATE NORMAL UPTAKE DISTRIBUTION IMAGES OF THE HEAD AND NECK REGION. M.Nakazawa, T.Shiraishi, T.Murata, H.Uehata, Y.Nishiyama, A.Kobayashi and N.Tanaka. Kansai Medical University, Osaka.

In Ga-67 scintigrams of the head and neck of a normal control group (20 cases) of which the into 11 regions, film density was measured in each region to determine Ga-67 citrate accumulation, and this data was used to create a quantitative standard of positivity for each region.

Ga-67 scintigrams of 131 patients with head and neck lesions (77 malignant tumor, 33 benign tumor, 21 inflammatory disease; 181 lesions in total). Positivity was then diagnosed using the standard derived from the normal control group.

Result showed a clear significant difference in Ga-67 citrate accumulation between the malignant tumor group and the control group. The benign tumor group showed a tendency towards no significant difference. The inflammatory group showed a wide range in accumulation with no tendency in common regions.

Sensitivity of the malignant tumor group was 81%; specificity, 47%; and accuracy, 70%.

The quantitative measurement of Ga-67 citrate accumulation was useful in the determination of positivity, indicating the possibility of positivity determination via automatic scintigram analysis.