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QUANTITATIVE ANALYSIS OF THE DISTRIBUTION OF Ga-67 IN ABSCESS-INDUCED RAT BY WHOLE BODY AUTORADIOGRAPHY (WBARG). S.Sanada, A.Ando, T.Hiraki, K.Hisada, K.Nitta. Schools of Allied medical professions and Medicine, Kanazawa University. Kanazawa, Daiichi Radioisotope Labs., Ltd. Tokyo.

WBARG provides a general view of the distribution of radiolabeled compounds in practically all tissues of the body. This technique gives tomographic image of the body. We investigated the quantitative analysis of the distribution of Ga-67 in rats induced inflammation at various stages by WBARG.

Abscess were induced in Wistar rats by injecting 0.2ml turpentine into these dorsum. Ga-67 citrate was injected at daily intervals after turpentine injection for 2, 4, 5, 7 and 10 days. The rats were killed at 24 hr after Ga-67 citrate injection and WBARG was carried out. The ratios of inflammatory tissue to various tissues radioactivity concentration were obtained from densitometric analysis.

The observation of these autoradiograms revealed that Ga-67 was accumulated in the limbus of abscess (i.e. inflammatory tissue), and concentration of Ga-67 was predominant in inflammatory tissue rather than the other tissues at 4, 5, 7 and 10 days after turpentine injection. The quantitative analysis of these autoradiograms revealed that the ratios of inflammatory tissue/liver, inflammatory tissue/bone and inflammatory tissue/kidney were highest at 7 days after turpentine injection.

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Ga-67 BINDING SUBSTANCES IN ABSCESS AND ORGANS. A.Ando, I.Ando, T.Hiraki, K.Hisada, K.Nitta and H.Ogawa. Kanazawa University. Kanazawa. Daiichi Radioisotope Labs., Ltd. Tokyo.

We already reported that large amounts of Ga-67 were accumulated in inflammatory infiltration around tumor and Ga-67 was bound to the acid mucopolysaccharides (heparan sulfate, etc) in tumor, liver, kidney, heart, lung and spleen.

This study was undertaken to elucidate Ga-67 binding substances in abscess and organs described below. Five days after subcutaneous injection of 0.2ml turpentine to the rats, Ga-67 citrate and sodium sulfate-S-35 were injected to these rats, respectively.

Twenty-four hrs after injection, muscle, pancreas, stomach, and small intestine were excised and homogenized, respectively. The homogenates from which the nuclear fractions were removed, were digested with proteinase. After digestion, the reaction mixtures were gel filtered on Sephadex G-100. Eluate samples were assayed for Ga-67, S-35, uronic acid and protein. And species of Ga-67 binding acid mucopolysaccharides were determined by ion-exchange technique.

In the case of abscess and the above organs, Ga-67 was eluted with acid mucopolysaccharides with molecular weights of 9400-40000, and with molecular weight larger than 40000. From these experiments, it was concluded that Ga-67 was bound to the acid mucopolysaccharides (heparan sulfate, etc) in abscess and the above four organs.

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UPTAKE OF Ga-67 BY AN EXPERIMENTAL ABSCESS: COMPARISON BETWEEN ABSCESS AND TUMOR. K. Nitta, H.Ogawa, A.Ando, I.Ando, T.Hiraki and K. Hisada, Daiichi Radioisotope Labs., Ltd. Tokyo. Kanazawa University. Kanazawa.

This study was undertaken to determine accumulation of Ga-67 in abscess and to compare uptake rate of Ga-67 between abscess and tumors.

Two, three, five, seven and ten days after subcutaneous injection of 0.2ml turpentine to the rats, Ga-67 citrate was injected to the rats. Twenty-four hrs after injection of Ga-67, abscess and organs were excised and uptake rates of Ga-67 were assayed. On the other hand, five days after subcutaneous injection of 0.2ml turpentine to the rats, Ga-67 citrate was injected to the rats, at various time intervals from 10 min to 6 days, abscess and organs were excised and uptake rates of Ga-67 were assayed. And subcellular distribution of Ga-67 in abscess was determined.

Uptake rates of Ga-67 in abscess increased with time after injection of turpentine and reached a plateau 5-7 days later. Ten min, 24 hrs and 72 hrs after injection of Ga-67, uptake rates of Ga-67 in abscess were 0.92%/g, 3.3%/g and 5.6%/g, respectively. Uptake rates of Ga-67 (24 hrs after injection) in abscess was 2.0-3.4 time of tumor uptake rates (previously reported). On the other hand, large amounts of Ga-67 were in supernatant and decreased with time, but Ga-67 in mitochondrial fraction (lysosome is contained in this fraction) increased with time until 24 hrs.

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Ga-67 UPTAKE IN THE INFLAMMATORY REGION—RELATION BETWEEN THE EFFECT OF ANTI-INFLAMMATORY AGENTS AND Ga-67 UPTAKE—. Y.Ohkubo, H.Kohno, T.Suzuki and A.Kubodera* Tohoku college of Pharmacy. Sendai. *Science University of Tokyo. Tokyo.

We attempted to establish the experimental system to judge the effect of anti-inflammatory agents by the change of the pattern of Ga-67 uptake in the inflammatory region.

The animals were Wistar rats, weighing 150-200g. Turpentine oil was used for inflammable agent. Paper pellet dipped in turpentine oil was implanted in the subcutaneous tissue of the abdominal wall of each animal. Rats were administered Ga-67 citrate intravenously at a dose of 5 μ Ci/rat and killed 24 hr after the administration.

The Weight of granuloma produced by turpentine oil increased gradually and reached a maximum at 6 days after the administration. The pattern of Ga-67 uptake was closely similar to that of the change of granuloma weight.

These results showed that the stage of inflammation could be indicated by the pattern of Ga-67 uptake.

We will report the results of the judgment for the effect of anti-inflammatory agents by using of this experimental system.