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BASIC ESTIMATION ABOUT THE QUANTIFICATION OF THE UPTAKE OF GA-67 IN THE LESION (SECOND REPORT). K.Hayama, T.Eguchi, N.Kitamura, and K.Maeda. Nippon Dental University, School of dentistry at Niigata.

We have studied quantification of Ga-67 uptake on scintigram, and derived theoretical equation from the experiment. It is possible to quantify by using this equation. The quantitative uptake ratio are obtained by substituting this equation into attenuation cofficients of soft tissue and bony tissue.

We previously reported theoretical equation was applicable to soft tissue system. The purpose of this paper is to measure attenuation cofficients of bone, to estimate accuracy of quantification of Ga-67 on system contain bony tissue experimentally, and to compare this ratio with visible appearance on scintigram.

In result, we confirmed this ratio was useful in quantification of scintigram was not always consistent with true accumulation in lesion, we would suggest to use quantitative uptake ratio in order to quantify Ga-67 uptake on scintigram.

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PARTICIPATION OF TRANSFERRIN IN Ga-67 UPTAKE TO INFLAMMATORY LESION.

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Transferrin plays a role in Ga-67 transport and biodistribution. But it has been not elucidated that whether its subsequent cellular uptake and subcellular distribution by normal and inflammatory tissues is the same mechanism involving transferrin.

In order to elucidate this point, subcellular fractionation was carried out. In this study it is ascertained that the mechnism of Ga-67 cellular uptake to inflammatory and normal soft tissues was clearly different from each other, namely in the latter mechanism transferrin participiated but didn't in the former. Ga-67 uptake to liver and spleen, normal soft tissues, was performed with transferrin binding form and subsequently accumulated in the lysosome or mitchondria fractions. It is may be carried out with receptor mediative endocytosis. To inflammatory lesion Ga-67 uptake was performed with free gallium ion form and subsequently accumulated in cell fluid fraction.

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BASIC STUDY CONCERNING THE ACCUMULATION OF RADIOACTIVE INDIUM INTO INFLAMMATORY LESION. M.Katayama,S.Sanada,A.Ando,I.Ando, T.Hiraki,N.Tonami,K.Hisada.Schools of Allied Medical Professions and Medicine, Kanazawa University, Kanazawa.

This study was undertaken to investigate the accumulation of In-114m in the inflammatory lesion. Inflammatory lesion was induced in rats according to the method of subcutaneous injection of turpentine oil. In-114m chloride was injected intravenously to the rats,and the uptake rates of this nuclide into the lesion and normal tissues were assayed. The accumulation of this nuclide was compared with that of Ga-67 by a dual nuclide technique using In-114m and Ga-67. Accumulation rate of In-114m in inflammatory lesion increased with time after injection of turpentine oil and reached plateau five days later. At that time the value(4.57%dose/g) for this lesion was larger than those for any other tissues. In experiments using the rats which had been held for five days after subcutaneous injection of turpentine oil, the accumulation rates of In-114m in inflammatory lesion increased with time until six days after administration Of In-114m chloride. Accumulation rate of In-114m in inflammatory lesion was larger than that(3.2%dose/g) of Ga-67. In the case of many organs(Kidney,spleen,liver,etc.),accumulation rates of In-114m were larger than those of Ga-67, although the rates of Ga-67 for bone and stomach were larger than those of In-114m.

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PHYSIOLOGICAL UPTAKE OF THE HEAD AND NECK REGION IN GA-67-ECT.

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Many cases are reported on physiological uptake of Ga-67,and that of lacrimal gland, nasopharynx and salivary gland is known generally at the head and neck lesion. Distribution and value of physiological uptake of the head and neck region are reported in Ga-67-ECT.

Ga-67 ECT was performed in 45 cases (malignant disease 40,benign disease 5),which were examined with bone-ECT simultaneously, and was compared with those in Ga-67 negative and bone negative images at the head and neck region (group I),in Ga-67 positive outside the head and neck region (groupII), in Ga-67 negative and bone positive at the head and neck region (groupIII) and in Ga-67 positive at the head and neck region (groupIV) .

These results indicate that images of Ga-67-ECT are available to determine the distribution of physiological uptake at head and neck region,and indicate that group I reveals the similar value of Ga-67 uptake between at the nasal cavity and at the parotid gland, that groupII reveals lower value of Ga-67 uptake at the lacrimal gland, the nasal cavity and the parotid gland than group I , and that groupIII and groupIV reveal higher value of Ga-67 uptake at the nasal cavity and the parotid gland than group I .