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SINGLE-PHOTON ECT OF THE LIVER. T.Kawai, H.Maeda, T.Fukuda and H.Akagi. Department of Radiology, Osaka Medical School, Takatsuki, Osaka.

Single-photon ECT of liver was performed on patients with diseases of liver, and detectabilities of mass lesion of liver were evaluated on conventional scintigram, ECT and X-ray CT. Multiprojective data were obtained by using a rotating table on which patients stand before the gamma camera or using a detector which rotated around the long axis of patients who lie in a gantry. The size of the liver in long axis is lengthened at the standing position on rotating table. The ECT images of the liver with a rotating table and using a detector which rotated around the long axis of patients were made almost the same observation. The ECT images of liver with 5-10 mCi of Tc-99m-phytate or Tc-99m-Sn-collloid were displayed and at the same time, multiprojectioning images were performed on the ECT data. Two hundred and forty-nine cases were examined by ECT, and 76 cases in 249 cases were analyzed with conventional scintigram, ECT and X-ray CT. The false negative was 6 cases (16.2%) with conventional scintigram but it decreased to 2 cases (5.4%) with ECT. The detectabilities of mass lesions were raised by using conventional scintigram and ECT at the same time. ECT should be used in the routine examination.

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THE CLINICAL USEFULNESS OF LIVER EMISSION COMPUTED TOMOGRAPHY USING ROTATING GAMMA CAMERA. K.Yamamoto, T.Mukai, K.Minato, N.Tamaki, Y.Ishii and K.Torizuka. Kyoto University School of Medicine Dpt. of Radiology and Nuclear Medicine. Kyoto.

For these several years, we have evaluated basic study and clinical application of the single photon emission computed tomography (ECT). By using rotating gamma camera, we have become to be able to examine ECT routinely. We attempted to evaluate the clinical efficacy of ECT examination for the detection of intrahepatic space occupying lesions.

In phantom study, ECT images could resolve at least the cold spot of 1.5 cm in diameter at every depth, which could not be revealed by the conventional scintigram.

For Tc-99m-phytate (3 mCi) liver scintigraphy, it took about 12 min. to acquire the sufficient counts, which was permissible time for routine use. The smallest liver tumor detected by ECT in clinical use was 18 mm in diameter. The three dimensional location of the tumor could be understood more easily by the observation of transaxial, sagittal and frontal sections. In conclusion, ECT using rotating gamma camera proved to be a practical method by potentiating conventional liver scintigraphy without increasing of radiation dose of patients.

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THE FUNDAMENTAL STUDY ON DEVELOPMENT OF THE LIVER SCANNING AGENT LABELLED WITH POSITRON EMITTERS (Ga-68). K.Ishioka, Y.Kuniyasu, H.Kakehi and Y.Tateno. reikyo University School of Medicine and National Institute of Radiological Sciences. Itabashi and Anagawa.

We have a project to develop a preparation for liver scanning agent for ECT. For this purpose, we study microspheres (aggregated human serum albumin) labelled with short-lived, positron emitters such as Ga-68.

On the fundamental and basic research for this labelling is studied used with Ga-67 which is  $\gamma$ -ray emitting isotope instead of Ga-68, and with Ga-68 itself. We report on the optimum labelling conditions (pH, temperature, and incubation time), the physiological and chemical properties such as adhesion to glass, the tissue distribution and the images with conventional scanner.

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EMISSION CT AND ECHOGRAPHY IN THE IMAGE DIAGNOSIS OF THE LIVER. H. Oyamada, H. Fukukita, H. Kawai, K. Nagaiwa, S. Terui, and T. Uehara. National Cancer Center, Tokyo.

Emission Computed Tomography of the liver was performed on 37 cases which were suspected of having intrahepatic masses. In this study, a scintillation camera (Ohio Nuclear  $\Sigma$ 410S) and a rotating chair were used. The computer used was Scintipac 1200. The chair was rotated manually 10 degrees, and finally 36 digital images were obtained, covering an entire circumference. The image quality was found to be good in 21 cases, fair in 12, and poor in 4. There were 21 cases on which ECT successfully depicted intrahepatic masses. The smallest nodule depicted on the ECT image was 2.5 x 1.8 cm on the surgical specimen. There were 3 cases on which ECT failed to depict intrahepatic masses. Two of them were in the areas close to the diaphragmatic surface, measuring 5.7 x 4.5 x 3.7 cm on the surgical specimen and 5.5 x 3.7 cm on the X-ray CT, respectively. The last one was found to be 3 x 3 cm on the echogram in the posterior segment.

It is apparent that the resolution of ECT is not as good as echography at present. Recently, we successfully developed a combined method of scintigram and echogram. In this method, a line, through which the echogram is taken, is electronically overlapped with the scintigram. This method is found to be useful and further clinical applications are going on.