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THE DIAGNOSIS OF DIFFUSE LIVER DISEASES BY LIVER SCINTIGRAM USING MULTIVALIATE ANALYSIS. H.Sekine, F.Tsujimoto, A.Sasaki, Y.Mori, K.Kawakami, T.Shimada, K.Suzuki, A.Asahara. Jikei University, Tokyo.

There are about five findings of liver scintigram of Tc-99m-phytate; 1) unhomogeneity of radionuclide in liver, 2) liver size (proportion of right to left lobe), 3) splenic uptake of radionuclide compared with liver uptake, 4) splenic size, and 5) bone marrow uptake of radiocolloid.

We usually decide the final scintigraphic diagnosis of diffuse liver diseases combined with these parameters. It is very delicate to select the grade of each parameter in each doctor, moreover, in the same doctor in the different conditions. So, in order to improve the reappearance of the grade of each parameter, we have made a quantitative estimation about each parameter previously noted. In the word, we have made a linear discriminant function from four parameters (from 2 to 5 above noticed), and we attempted the diagnosis of diffuse liver diseases from liver scintigram using the linear discriminant function. In this time, diffuse liver diseases include chronic active hepatitis, chronic inactive hepatitis, and liver cirrhosis.

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COMPARISON OF HEPATIC SINGLE PHOTON EMISSION CT (SPECT) AND PLANAR IMAGING IN DIFFUSE HEPATIC DISEASES. K.Ueno, H.Endo, S.Rikimaru, S.Yamamoto, J.Kasama, H.Yokoyama, H.Kaneto. Ishikawa Prefectural Central Hospital, Kanazawa.

In order to define the diagnostic accuracy of hepatic SPECT imaging for diffuse hepatic disease, hepatic SPECT and planar imaging were compared in 176 pts so far who were suspected to have diffuse hepatic disease. SPECT was performed with 3mCi of Tc-99m SN colloid, and dual headed ZLC-75 rotating gammacamera system coupled to Scintipac-2400S computer. The projection data were collected by 180° rotation in 5° increments at 20 sec per view. The reconstructed transverse SPECT image and planar image were read independently, and compared with the final diagnosis.

Results. In liver cirrhosis, colloidal shift to the spleen, splenomegaly, intrahepatic inhomogeneous radionuclide distribution were noted with SPECT as well as planar imaging, and the diagnosis of cirrhosis was not difficult. However, bone marrow image in cirrhosis was frequently undetected with SPECT (cutoff level=10%) even if it was clearly shown with planar imaging. In chronic hepatitis, colloidal shift to the spleen was frequently noted with both SPECT and planar imaging. In acute hepatitis, little changes were noted with either imaging.

Conclusion. SPECT could be used instead of planar imaging in the diagnosis of diffuse hepatic disease.

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CALCULATION OF THE PARTIAL CLEARANCE RATE OF THE LIVER AND SPLEEN USING Tc-99m-Sn COLLOIDS. H.Komaki, M.Nakamura, T.Miyamoto, K.Sato, Y.Takahashi and Y.Kuroda. Dep. of RI Center and *Radiology. Tenri Hospital, Nara

We attempted to measure the partial rate-constant of Tc-99m-Sn colloids clearance attributable to the liver, spleen and the bone marrow. Digital procession for curve fitting was performed in a single exponential fashion to "ROI-radiograms" of the heart, liver and spleen, which yielded the total clearance rate of almost identical value among the three. The distribution ratio of the colloids among the organs was obtained by integrating counts within the "ROI" of each organs in transaxial slices which was determined in each slice on 35% cut off delineation of maximum count. Its volume was simultaneously calculated.

The whole marrow uptake was estimated with the amount within three vertebral bodies on SPECT estimation and the ratio of their uptake to pelvic one calculated in the posterior pelvic plane on an assumption of the pelvic share to be 40% of whole body.

The total clearance rate times the distribution ratio gave the partial clearance significant relationship between the liver clearance rate and its volume in liver cirrhosis with reduction of the former surpassing that of the latter. This relationship of the spleen was significant beyond the disease groups but was insignificant within a single group.

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A STUDY OF IRON ABSORPTION IN PATIENTS WITH CHRONIC LIVER DISEASES. D.Nishimura, T.Oya and H.Saito. Nagoya University School of Medicine. Nagoya.

Iron absorption tests were performed in 34 subjects with chronic liver diseases (14 subjects of liver cirrhosis, 14 of chronic hepatitis, 4 of alcoholic liver disorder and 2 of fatty liver) and 10 normal persons and 10 subjects of iron deficiency anemia without liver diseases for control, using whole body counting technique. In 16 cases with liver diseases, absorption tests with drinking ethanol (about 180 ml of Japanese Sake) were also performed.

Results:

- 1) The mean absorption was 18% in normal persons.
- 2) In most cases with iron deficiency whether they had liver diseases or not, the absorption elevated above normal range. In each group of liver diseases without iron deficiency, no specific pattern of iron absorption could be found.
- 3) By measuring levels of serum ferritin of subjects with liver diseases, they were divided into 2 groups, each of one group probably with normal storage iron, and each of another probably with increased storage iron. Then the absorption was studied, but no significant difference could be found between these 2 groups.
- 4) In the presence of ethanol, the absorption increased in 12 cases, and decreased in 3 cases. The result was considered that ingestion of ethanol is a factor that enhances iron absorption.