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EVALUATION OF PORTAL CIRCULATION BY PER-RECTAL PORTAL SCINTIGRAPHY AND RADIONUCLIDE ANGIOGRAPHY. S. Shioimi, T. Minowa, T. Kuroki, T. Monna and S. Yamamoto. The 3rd Department of Internal Medicine, Osaka City University Medical School. Y. Shimonishi, M. Omura, H. Ikeda, K. Hamada, H. Ochi and Y. Onoyama. Department of Radiology, Osaka City University Medical School. Osaka.

After bolus injection of 10mCi of Tc-99m phytate, scintigrams were taken sequentially up to 1 minute. Time activity curve were generated over the right lobe of the liver, the lung and the kidney. The Portal component was measured in 66 cases according to Sarper's method. Using the technique of Per-rectal portal scintigraphy, mesurement of Shunt index was carried in 158 cases (the technique was reported previously.).

Results were as followed; 1) Per-rectal portal shunt indices were  $3.8 \pm 1.0\%$  in normal (n=5),  $6.1 \pm 2.3\%$  in chronic inactive hepatitis (n=21),  $7.9 \pm 3.8\%$  in chronic active hepatitis (n=28),  $10.8 \pm 6.4\%$  in alcoholic fibrosis (n=13),  $23.8 \pm 23.5\%$  in hepatic cirrhosis without varices (n=34),  $69.5 \pm 18.6\%$  in hepatic cirrhosis with varices (n=57). 2) Portal components were  $68.9 \pm 3.4\%$  in normal (n=11),  $62.1 \pm 5.9\%$  in chronic hepatitis (n=21),  $55.0 \pm 8.7\%$  in hepatic cirrhosis without varices (n=12),  $28.3 \pm 13.0\%$  in hepatic cirrhosis with varices (n=22). 3) Both Per-rectal portal scintigraphy and Radionuclid angiography were performed in 29 cases. A good correlation ( $r = -0.85$ ) was obtained between Shunt indices and Portal components.

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A NEW APPROACH TO THE PORTAL DYNAMICS ANALYSIS AND CALCULATION OF INTRAHEPATIC SHUNT-RATIO. Y. Takahashi, K. Akasaka, H. Komaki, T. Miyamoto, Y. Kuroda and C. Uyama. Hematology and Radiology, Tenri Hospital, Nara.

Portal dynamics study and measurement of the extra- and intrahepatic shunt ratio were performed by intrasplenic injection of Tc-99m-MAA and analysis of 'ROI' radiograms by a newly devised method.

For measurement of the intrahepatic shunt ratio, the cumulative amount of the tracer inflow into the liver was calculated by integrating 'ROI' curve of the portal trunk near the porta hepatis, from which back ground counts derived from neighboring high activity were subtracted. This cumulative amount versus time was adjusted to the increasing slope in the radiogram of the liver 'ROI', determined so as to eliminate the collateral routs, by multiplying it by a constant value concerning mainly the counting efficiency of these 'ROI's. The final cumulative level was used instead of the peak level in the liver radiogram, which had previously used to calibrate the shunt index. It was revealed that the previous 'shunt index' always underestimated the real shunt ratio calculated by this new method, which enabled detection and assessment of the small amount of shunting.

In portal dynamics analysis, transit time and transfer character for the tracer were determined from the distal splenic vein to the proximal portal trunk. They were prolonged and divergent in the cirrhotics along with remarkable delay in its arrival to lungs.

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A NONINVASIVE METHOD OF PORTAL CIRCULATION BY PER RECTAL ADMINISTRATION OF TL-201. N. Tonami, K. Nakajima, K. Hisada, T. Aburano, N. Tanaka and K. Kobayashi. Kanazawa University School of Medicine. Kanazawa.

A new method for evaluating portal systemic circulation by  $^{201}\text{Tl}$  per-rectal administration was developed and performed in 65 patients with various liver diseases and in 13 normal subjects. In normal controls, the liver was visualized on the 0-5 min image whereas the images of other organs such as the heart, spleen, and lungs were very poor. In patients with liver cirrhosis associated with portal-systemic shunt, and in many other patients with hepatocellular damage, the liver was not so clearly visualized, whereas radioactivity in other organs, especially the heart, became evident. H/L ratio was significantly higher in liver cirrhosis than in normal and patients with chronic hepatitis ( $p < 0.001$ ). The patients with esophageal varices showed a significantly higher H/L ratio compared with that in cirrhotic patients without esophageal varices ( $p < 0.001$ ). The H/L ratio also showed a significant difference ( $p < 0.01$ ) between stage 1 and stage 3 esophageal varices. Our present data suggest that this new noninvasive method seems to be useful in evaluating portal-to-systemic shunting.

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Tc-99m-PI CHOLESCINTIGRAM AS AN ASSESSMENT TOOL OF LIVER FUNCTION. T. Nakaki, H. Inoue and S. Hosoda. Internal medicine, Shiga University of Medical Science. Otsu.

Tc-99m-pyridoxylidene isoleucine (PI) cholescintigrams were performed against 43 patients with various liver diseases which were diagnosed by liver biopsy, including acute hepatitis recovery phase, chronic hepatitis inactive, chronic hepatitis active, cirrhosis of the liver and the others. Cholescintigrams were obtained and calculated by computer to demonstrate functional hepatogram with the time sequence. Radioactivities of circulatory blood were measured sequentially. ICG tests were performed within 1 week at the time of cholescintigram.

Computerized functional hepatograms revealed same patterns like renograms as developments of liver dysfunction which were useful to assess the liver function. As regards with diagnoses of liver biopsy, both T(1/2) in circulation study and T(1/2) in functional hepatogram showed tendencies of prolongation. T(1/2) in circulation study in abnormal ICG cases was prolonged significantly comparing with normal ICG cases. T(1/2) in circulation study and T(1/2) in functional hepatogram were not correlated significantly.