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USEFULNESS OF TRANSSPLENIC RADIONUCLIDE PORTOGRAPHY BEFORE AND AFTER THE SCLEROTHERAPY OF ESOPHAGEAL VARICES. H.Hihara, G.Uchiyama, H.Fujimoto, K.Kachi, Y.Saito, T.Araki, S.Hayashi, T.Araki, H.Fujii, and Y. Yamamoto. Yamaguchi Medical College, Yamaguchi.

The hemodynamics before and after the sclerotherapy of the esophageal varices was studied by injecting Tc-99m pertechnetate percutaneously into the spleen. The study was performed on 15 patients. Serial images, obtained before and after the sclerotherapy for each patient, were stored in a computer and later analyzed with a ROI technique. Radio-activity over the area of coronary vein and that of the liver was measured as region of interest. Their ratio was calculated using gamma-fitting method for their time-activity curves and used as a blood flow ratio. There were correlated tendencies between radioactivity ratios and scores of endoscopic findings as well as serum bile acid concentration. The method was able to visualize the physiological splenoportal flow and supplied useful prognostic information after the sclerotherapy.

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FACTOR ANALYSIS AS AN INTERPRETATION OF DYNAMIC SCINTIGRAMS OF CONGENITAL BILIARY ATRESIA

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The present study involved hepatobiliary scintigrams of 75 studies of congenital biliary atresia. Each patient received an intravenous injection of 2mCi Tc-99m PMT and 128 image of 30 seconds each were recorded. Conventional processing with Shimazu Corp. Scintipack 2400 manual determination of liver R.O.I, followed by the calculation of R.O.I activity curves and 2 factor analysis and 3 factor analysis were enforced. The factor falls under two heads, one is intrahepatic bile flow and the other is anastomotic jejunum area. Compared with R.O.I's activity curve, the hepatic factor curve reflected clinical symptoms.

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DECONVOLUTION ANALYSIS OF THE HEPATOBILIARY SCINTIGRAPHY

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Recently, deconvolution analysis of the renogram have been reported as an index of renal function. We applied this method on hepatobiliary scintigraphy for quantitation of liver function. 99mTc-EHIDA hepatobiliary scintigraphy were performed in patients with various hepatobiliary disease, and in normal volunteers. After smoothing with data-bounding technique, retention functions were calculated by discrete deconvolution analysis. Furthermore, we examined normal renogram to validate the calculating procedure by comparison with reported results and to compare with the results of hepatobiliary analysis. On data smoothing, best fitted curves need second smoothing. But, this technique could be applied to the data with complicated curves. The retention functions of hepatobiliary scintigraphy showed dull slope in comparison with the results of renogram. It seems that this retention function is useful method as an index of liver function.

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APPLICATION OF DECONVOLUTION ANALYSIS TO Tc-99m-PMT HEPATOBILIARY SCINTIGRAPHY.

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Deconvolution analysis was applied to hepatobiliary imaging with Tc-99m-N-Pyridoxyl-5-Methyltryptophan (PMT) to obtain the transfer function (TF) which corresponds to the impulse response function of the liver following direct bolus injection of the tracer into the main hepatic vasculature. Consequently TF represents the spectrum of transit time (TT).

Minimum (min), mean and maximum (max) TT measured in right lobe of normal control group averaged 6.8±1.17 (S.D.) min., 14.9±2.3 min. and 32.9±4.9 min., respectively. In each of the groups of 3 cases of acute hepatitis, 20 cases of chronic hepatitis and 14 cases of liver cirrhosis, mean TT and max TT were significantly prolonged. In cases of normal control, chronic hepatitis and liver cirrhosis there was a significant inverse correlation between mean TT and effective hepatic blood flow (EHBF) estimated from blood clearance ($r = -0.515, p < 0.01$).

Functional images of min TT, mean TT and max TT, which displayed respective TT for each element of the matrix in a color scale, were very useful for quantitative evaluation of regional excretory function.