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HEPATOBIILIARY SCINTIGRAPHY AND LIVER FUNCTION TESTS IN PATIENTS WITH HEPATOBIILIARY DISORDER. H.hoshi,S.Jinnouchi,K.Watanabe,S.Ono,Y.Kihara. Department of Radiology, Miyazaki Medical College. Miyazaki.

Hepatic uptake and biliary excretion of Tc-99m-N-pyridoxyl-5-methylthiothiohan were studied using a gamma camera (LFOV) and a computer on-line system (scintipac 1200). The cases subjected to study were 53 cases with normal serum bilirubin levels and 42 cases with high serum bilirubin levels (1.4-26.1 mg/dl). In cases with normal liver, the mean appearance time of common bile duct, gall bladder and small intestine were  $13.8 \pm 2$ ,  $13.9 \pm 1.8$ ,  $26.7 \pm 4.2$  min.. Liver uptake rate (Ku) and liver excretion rate (Ke) were  $0.40 \pm 0.037$  min<sup>-1</sup>,  $0.0274 \pm 0.005$  min<sup>-1</sup>. Appearance times of small intestine were prolonged in cases with low excretion rate. Significant correlation was observed between liver excretion rate and total serum bilirubin levels, but correlation between liver uptake rate and total serum bilirubin levels was low. Correlation coefficient between liver excretion rate and GOT, GPT, r-GTP, AL-P were -0.69, -0.51, -0.5, -0.34.

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HEPATIC UPTAKE MEASUREMENT OF Tc-99m-PMT BY SPECT AND ITS FUNCTIONAL IMAGE. K.Nakamura,H.Maeda,T.Hirano,T.Kitano and T.Nakagawa. Department of Radiology, Mie University. Tsu, Japan

Hepatic uptake of Tc-99m-PMT was measured by SPECT at 4-5min. after bolus injection. Scan time was 1min. and SECT image was constructed by convolution method and corrected by Chang's method of attenuation correction. The value of liver background activity was determined as  $0.812 \times$  (splenic activity), which was obtained from SPECT image of Tc-99m-human serum albumin, because liver background activity was influenced by its organ vascularity and blood pool. Total liver uptake was calculated as total liver counts/total dose counts. Mean uptake image was constructed by (counts over each pixel of the liver)  $\times$  (blood volume) / (Total counts of dose).

Total liver uptake was well correlated with blood retention, K-ICG and choline esterase,  $r = -0.85$ ,  $0.92$  and  $0.72$  respectively. Mean uptake image could give up the liver function/volume and was clinically useful.

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It is well known that the sequential hepatobiliary scintigraphies is the most useful method for the differential diagnosis of congenital biliary atresia from infantile hepatitis. For this reason, 386 hepatobiliary scintigraphies were performed for the children with jaundice, ranged 1st day of the life to 14 years old.

Of 386 scintigraphies, 134 were performed with I-131 rose bengal (1973.8~1980.4), 3 were with Tc-99m MIBA (1976.6), 82 were with Tc-99m PI (1977.10~1979.9), 35 were with Tc-99m HIDA (1979.6~1980.11), 89 were with Tc-99m EHIDA (1979.7~1983.2), and 43 were with Tc-99m PMT (1982.7~1983.3).

From our experience, clinical evaluation of the hepatobiliary scintigraphies in pediatric age will be discussed.

#### Evaluation of the Hepatobiliary Scintigraphies in Children

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SCINTIGRAPHIC STUDY ON INTRAHEPATIC BILIARY EXCRETION. T.MORI, K.ONO, K.NISHIZAWA. Hiroasaki University School of Medicine. Hiroasaki.

The intrahepatic bile excretion mechanism was studied on 40 normal subjects by hepatobiliary scintigrams. After overnight fasting, each subject was injected with 2 mCi of Tc-99m-EHIDA intravenously and 15 were further injected with CCK-PZ after 30 min. Analog images were acquired at every 5 min during 60 min. The radioactivity was measured through the detector connected with computer, at 1 frame/10sec and dynamic curve and cps were recorded at 4 region of interest; bilat. intrahepatic bile duct, bilat. hepatic parenchyma.

Results obtained as summarized as follows. Bilat.intrahepatic duct got visualized by 10 min. The intensity of image at lt. hepatic duct was more prominent than those at rt. hepatic duct in 80% of the subjects. Peak time and half-life of the dynamic curve at lt.side parenchyma were same as those of rt.side. However, peak time at lt.hepatic duct delayed with statistically significant compared that of rt. side. Residual RI activity of lt. hepatic duct was higher than that of rt.hepatic duct at the parenchymal half-life time. CCK was observed that to prompt the excretion of the hepatic bile.