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COMPARATIVE EVALUATION OF TC-99M DIETHYL IDA, PIIDA, (P-BUTYL)IDA COMPARED WITH TC-99M HIDA AND PI:CLINICAL AND ANIMAL EXPERIMENTS. S.Kawaquchi, M.Iio, H.Murata, K.Chiba, H.Yamada, M.Noquchi, E.Ohtake. Tokyo Metropolitan Geriatric Hospital, Itabashi, Tokyo, Japan

The purpose of the study is to evaluate the clinical utility of 5 Tc-99m labeled hepatobiliary scanning agents, to examine the hepatobiliary transport of rat with & without BSP and to mention the clinical utilizations.

The hepatobiliary transport was diagnosed fastest in diethyl IDA and followed PI, HIDA, PiIDA, (p-butyl)IDA. Urinary excretion was least in (p-butyl)IDA with average 5.5% dose per a day in normal case. Next was diethyl IDA with average 10%.

The computer analysis of the data could make color functional image of peak time, peak count,  $K_1, K_2$ . The difference between cases was easily demonstrated.

The hepatobiliary image of HIDA showed poor in Roter's syndrome, trapped in the liver in Dubin-Johnson syndrome and almost normal in Gilbert's disease.

In the animal blood clearance study, the load of BSP in control rat affected the clearance of (p-butyl)IDA, diethyl IDA, HIDA and PI suggesting the existence of competitive inhibitory pathway.

To conclude, diethyl IDA was recommended to be the first choice for non-jaundiced hepatobiliary diseases and (p-butyl)IDA for jaundiced cases.

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EVALUATION AND COMPARISON OF Tc-99m LABELED PI, HIDA, ETHYL-HIDA AND BUTHYL-IDA AS A HEPATOBILIARY IMAGING AGENT. A.Kido, M.Fukuchi, T.Morita, K.Hyodo, A.Nishikawa, K.Hamad-a and K.Nagai.

Hepatobiliary imaging is commonly performed with I-131-BSP and I-131-Rose bengal. Recently, Tc-99m labeled agents can be used for assessment of hepatobiliary status. Evaluation and comparison of Tc-99m labeled 4 different agents, such as PI, HIDA, ethyl-HIDA, and buthyl-IDA, were studied. Tc-99m labeled agents were commercially obtained, and each subjects, 2 normal volunteers and 71 patients with jaundice, received 4 mCi i.v. by bolus injection. The instrument was a gamma camera with a computer and dynamic imager on-line system. Time activity curves and images were determined from the stored data. (A) Following results were obtained in 2 normal volunteers; (1) Blood clearance at 30 min were as follows; PI 10%, HIDA 8%, buthyl-IDA 7% and ethyl-HIDA 3.3%. (2) Maximum liver uptake was found at 10-11 min by PI, 14 min by HIDA and ethyl-HIDA, 20 min by buthyl-IDA. (3) Images of gallbladder detected at 10 min by PI and ethyl-HIDA, and 20 min by HIDA and buthyl-IDA. (4) Renal images were shown clearly by PI and ethyl-HIDA, very smaller amount by HIDA, and no significant by buthyl-IDA. (B) Results of clinical application of the agents in 71 patients with jaundice shows that it is useful agents for the assessment of hepatobiliary clinical status.

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DIAGNOSTIC VALUE OF HEPATOBILIARY SCINTI- PHOTOGRAPHY WITH Tc-99m-LABELLED RADIOPHARMA CEUTICALES. Y.Yumoto, M.Morita, H.Yamamoto, H. Tokuyama and H.Maruyama, and K. Mitani. Shikoku National Cancer Center. Matsuyama, Japan.

This study reports the evaluation of the various Tc-99m-labelled hepatobiliary scanning agents in 61 cases with liver diseases. In 5 cases of healthy control, appearance time of radioactivity in common bile duct are 15-30 min with diethylIDA, 15-30 min PI, 20-30 min with HIDA, 20-30 min with parabutyl-IDA (BIDA) respectively. The urinary excretion rate showed most small amount (5-10%) in 4 radiopharmaceuticals. In 6 cases with intrahepatic cholelithiasis, useful information concerned passage of bile duct namely abnormal pooling in intrahepatic bile duct were obtained with sequential hepatobiliary scintiphotos. In such cases with abnormal pooling in the intrahepatic bile duct, serum bilirubin levels showed less than 2.0 mg/dl with normal or slightly elevated serum transaminase activities, high values of serum ALP,  $\gamma$ -GTP and LAP activities were obtained in whole clinical course. Estimation of lipo X showed slightly positive or moderately positive reaction. In 5 cases with high levels of serum bilirubin, Tc-99m-BIDA hepatobiliary scintiphoto showed well demonstration of hepatic image and common bile duct compared to other agent and provide a high degree of accuracy in differential diagnosis of jaundice.

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DIAGNOSTIC VALUE OF HEPATOBILIARY TRACT SCAN WITH Tc-99m PI IN THE INTRAHEPATIC STONES. Y.Kuniyasu, H.Takehi, S.Mimoto, K.Oyama, M.Yasuda and T.Yamakawa. Dept. of Radiology and Surgery, Teikyo University School of Medicine. Tokyo.

The purpose of this study is the clinical evaluation of the hepatobiliary tract scan with Tc-99m PI, in the diagnosis of intrahepatic bile duct stones. Scintigraphic studies were performed in 64 subjects, including 25 with intrahepatic bile duct stones. The studies were examined about the findings that were obtained by one or several routine studies. These findings were compared with the scintigraphic findings. The scintigraphic findings contained the delay on the peak time of the hepatic accumulation of Tc-99m PI, irregular distribution of the hepatic activity, the picture of the dilatation in the hepatic bile duct and/or choledochus, the pooling figure suggesting the disorder of bile flow in the intrahepatic bile duct and a delayed duodenal visualization. In the cases of intrahepatic bile duct stones, these scintigraphic findings were observed over 80 to 90 percent more and also showed precisely the pathologic conditions in the biliary system. This study shows that the hepatobiliary tract scan is very useful to examine the pathologic conditions of the biliary system in the intrahepatic bile duct stones, especially as to the follow-up studies in the cases of the intrahepatic bile duct stones after operated.