
Cholescintigraphy with a new radionuclide Tc-99m-PMT was performed in 56 patients having hepatobiliary diseases. The patients consist of 24 cases of hepatocellular disease, 10 of biliary duct disease, 9 of gall bladder diseases and 30 of liver tumors. On this study, we came to the conclusion as the followings. (1) We evaluated the usefulness of this radionuclide agent from the point of view of the visualization of the following 3 bile ducts, the left intrahepatic duct, the anterior branch and the posterior branch of the right hepatic duct. Compared with one group, in which any bile duct was not visualized, the other group, in which at least one of the ducts was visualized, was higher in total bilirubin, blood retonia ratio and urine excretion ratio, and lower in Ke. value. There is, however, no significant difference was shown between the number of the visualized bile ducts and the above mentioned parameters. In the cases with obstructive jaundice, the bile ducts were imaged as photon deficient areas. The ability of Tc-99m-PMT to identify the bile ducts was 100% in the left hepatic duct, 75% in the anterior branch of the right hepatic duct and 38% in the posterior branch of the right hepatic duct, in the patients with no jaundice. In the cases with jaundice, this ability was 100%, 66%, and 50% respectively, including the cases in which the bile ducts were imaged as photon deficient.

Hepatobiliary scintigraphy with Tc-99m-N-pyridoxyl-5-methyltryptophan (Tc-99m-NPT). Scintigraphy with Tc-99m-diphospho-IDA (Tc-99m-EDIDA) was also evaluated in four of these patients. Tc-99m-PMT showed rapid blood clearance and prompt hepatobiliary transit. In nineteen patients, including a case with serum bilirubin level of 19.4 mg/dl, biliary tract was visualized within 1 hour after administration. Urinary excretion was very low (percent dose excreted in urine in 1 hour: 0.7-4.2) and there was no case in which urinary tract was clearly visualized. Tc-99m-EDIDA, on the other hand, demonstrated higher urinary excretion and the images of hepatobiliary system were worse in comparison with those obtained by Tc-99m-PMT because of high background activity and urinary tract visualization. It is concluded that Tc-99m-PMT is a superior hepatobiliary imaging agent in patients with high serum bilirubin levels.


Tc-99m-PMT hepatobiliary scintigraphy was performed in 52 patients with hepatobiliary diseases. Serial hepatobiliary images were obtained every 225 seconds for 1 hour in the fasting state after the injection of 3.75mCi of Tc-99m-PMT. The data were simultaneously acquired on 64x64 computer matrix at 1 frame/30sec. The time-activity curves from heart and liver ROI were analyzed by using a two-compartment model. Both the first compartments of blood disappearance activity and hepatogram were very fast. The second compartment of the blood activity showed fair correlation with slow compartment in hepatogram (N=46, r=0.66). The urinary excretion rate of Tc-99m-PMT in the first one hour was extremely little (0.7-4.0%). There was an inverse correlation between A and ICG R-15 values (N=13, r=-0.64). Good quality of hepatobiliary images were obtained in hyperbilirubinemia patients. (b) Good hepatobiliary images were obtained in hyperbilirubinemia patients. (c) Low urinary excretion and Tc-99m-PMT is a useful agent in clinical evaluation of hepatobiliary function.