CLINICAL EVALUATION OF Tc-99m-N-pyridoxyl-5-methyl-triptophan (PMT) as a new hepatobiliary tract imaging agent.


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Scintigraphic imaging of the hepatobiliary system has been significantly improved with the development of many 99mTc-labeled compounds. In vitro and in vivo studies of a new hepatobiliary scanning agent, Tc-99m-N-pyridoxyl tryptophan, have been investigated on its physiologic and kinetic aspects in normal cases. In vitro stability and radiocchemical purity were checked with paper chromatography. A single peak on Pcr analysis showed its high stability and radiochemical purity 2 hours after production.

The time course study on organ distribution of Tc-99m-PMT in mice showed rapid hepatobiliary transport and low urinary excretion, compared with Tc-99m-pyridoxylidine isocoumarin (Tc-99m-PIC). Two groups, 46 patients with many kinds of hepatobiliary diseases and 9 control patients including 7 volunteers, were studied. The peak time of hepatogram in control patients was 9±1 min, and T1/2 was 3±1.4 min. The urinary excretion of Tc-99m-PMT was 2.5±0.7% of total activity 60 min after administration. These values were compared with them of 8 volunteers studied with Tc-99m-PIC.

In healthy subjects, Tc-99m-PMT has been concluded as a potential hepatobiliary radiopharmaceutical with rapid hepatobiliary transport and low urinary excretion.

HEPATOBILIARY SCINTIGRAPHY AND FUNCTION TEST WITH 99mTc-N-PYRIDOXYL-5-METHYLTRIPTOPHAN (99mTc-PMT).


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The authors studied the effectiveness of 99mTc-N-pyridoxyl-5-methyltriptophan (99mTc-PMT) for dynamic imaging and function on 40 patients with various hepatobiliary diseases and on healthy individuals.

In healthy subjects, 99mTc-PMT is rapidly removed from the blood by the parenchymal cells of the liver and is excreted through the biliary system. The imaging of liver, bile ducts, gallbladder and intestine with 99mTc-PMT was satisfactory. There was no renal visualization. In the case of serial images of healthy individuals, the gallbladder, intrahepatic bile duct and small intestine were visualized after 18.8 ± 7.2, 8.8 ± 1.4, and 16.7 ± 6.3 minutes, respectively; the mean peak time on the hepatogram was 8.0 ± 5.3 minutes.

At 70 minutes after intravenous administration of 99mTc-PMT, 2.52 ± 1.48% of the injected dose was excreted into the urine of the healthy individuals. The urinary excretion of 99mTc-PMT by the patients with hepatobiliary diseases, was not increased. At 5 minutes after injection, the values for the patients who had cholelithiasis, liver cirrhosis and hepatoma, Blood retention at 20 min. after the injection was related to serum GOT and serum-total bilirubin.