

297

CLINICAL EVALUATION OF Tc-99m-N-PYRIDOXYL-5-METHYL-TRIPTOPHAN AS HEPATOBILIARY TRACT IMAGING AGENT. H.Hoshi, K.Watanabe, T.Kodama, S.Jinnouchi, K.Arakawa and H.Honda. Department of Radiology, Miyazaki Medical College. Miyazaki

The usefulness of Tc-99m-N-pyridoxyl-5-methyl-tryptophan (PMT), a new hepatobiliary tract imaging agent, was investigated by comparing with Tc-99m-N-(P-butyl phenyl-carbamoylmethyl) iminodiacetic acid (P-butyl IDA). The cases subjected to study were 30 cases with normal serum bilirubin levels and 22 cases with high serum bilirubin levels (1.6-26.1mg/dl). 28 cases of these 52 cases were also studied by P-butyl IDA scintigraphy within 1 week after PMT scintigraphy. Upper abdominal scintigrams were obtained with a LFOV gamma camera (Searle Radiographics) or MaxiCamera 400T (G.E.) at 5, 10, 20, 30, 40, 60 minutes after the injection. If necessary, additional scintigrams were obtained even after 60 minutes.

Results; In cases with normal serum levels, the mean appearance times of gall bladder, common bile duct, small intestine using PMT were 23.3 ± 12.5 , 20.5 ± 11.3 , 40.3 ± 24.8 min., and these were definitely earlier than those of P-butyl IDA ($p < 0.05$). In cases with high serum bilirubin levels less than 10mg/dl, excretion into intestine were observed in 11 cases out of 14 (maximum value was 9.2mg/dl). But it was difficult to observe excretion into intestine in all 8 cases with high serum bilirubin levels higher than 10mg/dl.

299

CORRELATION OF Tm-99m PMT HEPATOBILIARY SCINTIGRAPHY AND LIVER FUNCTION TEST. S.Mimoto, I. Obara, H.Masuda, Y.Sajima, O.Kondo and M.Yasuda. Yokohama Municipal Citizens Hospital. Yokohama

Hepatic uptake and biliary excretion of newly developed Tc-99m PMT were studied in healthy subjects and patients with various types of hepatobiliary diseases (60 persons in all), and the following results were obtained.

- 1) Tc-99m PMT gives good visualization of the hepatobiliary duct even in the presence of hyperbilirubinemia. It has also the advantage of non-visualization of kidneys.
- 2) A strong care has to be taken in setting ROI since uptake and excretion $T_{1/2}$ are strongly influenced by location of ROI.
- 3) The means of uptake and excretion $T_{1/2}$ were increased, but not significantly, in cirrhotic patients.
- 4) Significant correlations were noted between the uptake $T_{1/2}$ of A and I.I in healthy subjects, the uptake and excretion $T_{1/2}$ of C and urinary excretion in patients with cholelithiasis, the excretion $T_{1/2}$ of B and urinary excretion in patients with chronic hepatitis.
- 5) No difference in excretion, excretion $T_{1/2}$ was noted in relation to abnormalities of various parameters of the liver function test.

298

CLINICAL EVALUATION OF Tc-99m-Sn-PYRIDOXYL-TRYPTOPHAN AS A NEW HEPATOBILIARY SCANNING AGENT. Y.Kuniyasu, S.Higashi, K.Nakaoji, Y.Niio, M.Kawakubo, H.Itoh, Y.Kawada, H.Takehi, S.Mimoto, and M.Yasuda. Division of Nuclear Medicine, Dept. of Radiology, Teikyo University Hospital.

Scintigraphic imaging of the hepatobiliary system has been significantly improved with the development of many Tc-99m-labeled compounds. In vitro and in vivo studies of new hepatobiliary scanning agent, Tc-99m-Sn-pyridoxyl tryptophan has been investigated on its physiological and kinetic aspects in normal cases. In vitro stability and radiochemical purity were checked with paper chromatography. A single peak on Pc analysis showed its high stability and radiochemical purity 24 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-pyridoxylidene isoleucine (Tc-99m-PI). 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 were 9 ± 1 min, and $T_{1/2}$ was 31 ± 5 min. The urinary excretion of Tc-99m-PMT was $2.5 \pm 0.7\%$ of total activity 60 min after administration. These values were compared with them of 4 volunteers studied with Tc-99m-PI.

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

300

HEPATOBILIARY SCINTIGRAPHY AND FUNCTION TEST WITH 99mTc-N-PYRIDOXYL-S-METHYLTRYPTOPHAN (99mTc-PMT). K.Sugimura, I.Narabayashi, K.Yamasaki, T.Suematsu, R.Ohnishi, K.Itoh, S.Nishiyama, Y.Inoue, T.Fukugawa, C.Sugimura, S.Kimura, M.Matsuo. Kobe University School of Medicine. Kobe.

The authors studied the effectiveness of 99mTc-N-pyridoxyl-5-methyltryptophan (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 intestines 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 the intravenous administration of 99mTc-PMT, $2.52 \pm 1.48\%$ 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.