

COMPERATIVE EVALUATION OF Tc-99m LABELED NEW HEPATOBILIARY SCANNING AGENTS, Tc-99m HIDA & Tc-99m-(Sn)-PI WITH SPECIAL EMPHASIS ON CASES OF CONSTITUTIONAL JAUNDICES

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New hepatobiliary scanning agents, Tc-99m HIDA(43 cases) and Tc-99m-(Sn)-PI(38 cases), were clinically evaluated since July 1978 in TMGH. The purpose of this study is to evaluate the clinical utility of Tc-99m HIDA and Tc-99m-(Sn)-PI comparing with I-131 BSP, I-131 RB and other Tc-labeled compounds which has been used as routine agents.

Eleven cases including 3 cases of Dubin-Johnson syndrome, 2 cases of Gilbert's disease, a case of normal and 3 cases of hepatobiliary obstructive disease were examined with these 2 agents. About 2mCi of Tc-99m label was administered. The images were evaluated by microdot imager system(sequential 16 images), poraloid films and computerized analysis(hepatogram etc.). Blood clearance was also performed and t1/2 was obtained by assuming blood activity at 4 minutes after injection to be 100%. The cumurative excretion into urine was evaluated for 24 hours.

Both Tc-99m HIDA and Tc-99m-(Sn)-PI gave satisfactory images within short period. Tc-99m HIDA showed faster blood clearance rate than Tc-99m-(Sn)-PI. However, Tc-99m-(Sn)-PI showed faster hepatobiliary transport than Tc-99m HIDA. Cumurative urinary excretion was almost same between 2 agents. Both agents showed increased excretion into urine when hepatobiliary disorders exist. Three cases of Dubin-Johnson syndrome showed remarkably delayed hepatobiliary transport with Tc-99m HIDA and slightly delayed hepatobiliary transport with Tc-99m-(Sn)-PI. Two cases of Gilbert's disease showed almost normal dynamic images both by 2 agents.

In conclusion, with regard to conventional hepatobiliary scans, both Tc-99m HIDA and Tc-99m-(Sn)-PI showed satisfactory results. The images obtained with constitutional jaundice cases suggest that the scans using 2 agents could be of value for the differential diagnosis of constitutional jaundice cases as previously reported by using I-131 labeled compounds.

THE EFFECTS AND LIMIT OF DIAGNOSTIC USE OF Tc-99m HIDA FOR HEPATOBILIARY SYSTEM

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In this report, Tc-99m HIDA was used for morphological and functional diagnosis of hepatobiliary system, and the effects and limits of these application was studied to compare with other technical method ; scintigraphy with Phytate, X-ray, echo and biochemical method.

In the morphological studies, Tc-99m HIDA showed the excellent images of hepatobiliary tract and of high diagnostic value and no difference with the scintigraphy of liver using Phytate. There were also some cases of showing the defect in the extra-hepatic bile-duct. But, in cases of severely obstructive jaundiced patients, serum bilirubin levels exceeded 4-6 mg/dl, the liver and biliary system were not well seen. In the diagnosis of gall-stone, X-ray technique was superior to radiotracer imaging. An interesting aspect of HIDA was visualization of the case of constitutional jaundice. Dubin-Johnson syndrome showed a long times retention of the activity in spite of the fast accumulation in the liver. On the other hand, Roter disease was not obtained the image of liver, and Gilbert disease showed normal image. According to these findings, it is believed that the differential diagnosis between these jaundices is possible by the scintigraphic techniques of Tc-99m HIDA.

In the functional studies, uptake ratio and excretion ratio of Tc-99m HIDA in the liver showed the correlation with the biochemical data; ICG, T.Bili., YGTP, and the possibility of application for diagnosis of obstructive jaundices was suggested.

Furthermore, because of the short half life time, Tc-99m HIDA will be one of the most appreciable radiopharmaceuticals to look at the progress of the diseases and therapy and verity the results after operation of the bile-duct system.