

## Studies on Dynamic Analysis of Liver and Biliary Tract Diseases with $^{131}\text{I}$ -BSP

S. ARIMORI, H. YOSHIOKA, M. HASEGAWA, I. IWASAKI and K. HIRAKI

*Second Department of Internal Medicine, Okayama University Medical School,  
Okayama*

Newly developed  $^{131}\text{I}$ -BSP was tested as a dye excretion test of liver on seven normal subjects and twenty hepatic and biliary tract diseases such as serum hepatitis, acute hepatitis, chronic hepatitis, liver cirrhosis, cholecystopathia, pancreatic calculus and cancer of bile duct.

The examinations were done on  $^{131}\text{I}$ -BSP blood disappearance time ( $T_{1/2}$ ), blood disappearance rate (K, BDR), blood retention ratio at 30 (BRR30) and 45 (BRR45) minutes after injection of  $^{131}\text{I}$ -BSP. The excretion of  $^{131}\text{I}$ -BSP into bile from the liver, and scintillation photography of hepatic region were also studied. In normal subjects,  $T_{1/2}$  had a range of 5 to 8 minutes (mean value  $\pm$  standard deviation was  $6.0 \pm 0.93$  minutes), BDR was 0.087 to 0.139 ( $0.118 \pm 0.017$ ), BRR30 was 11.0 to 14.9% ( $12.76 \pm 1.07\%$ ), BRR45 was 9.3 to 10.2% ( $9.8 \pm 0.33\%$ ). In the patients with liver cirrhosis,  $T_{1/2}$  was  $9.0 \pm 1.4$  minutes, BDR was  $0.078 \pm 0.01$ , BRR30 was  $19.5 \pm 2.95\%$ , BRR45 was  $12.7 \pm 2.55\%$ . The patients with obstructive jaundice have shown prolonged  $T_{1/2}$ , decreased K value and high blood retention ratio of  $^{131}\text{I}$ -BSP.

The cpm in the bile as well as supernatant and residue of bile, which had been treated with one per cent picric acid and centrifuga-

tion, had shown quite different curve in the patients with cholecystopathia or chronic hepatitis from normal subjects as a tri-phasic and small deviation curve. The cold BSP dye that had been added into the  $^{131}\text{I}$ -BSP did not affect to  $T_{1/2}$ , BDR and BRR. The absorption curve with spectrophotometer of BSP and cpm of  $^{131}\text{I}$ -BSP in the bile been successively collected, traced same sloped curves. The BRR30 were almost equally decreased at BRR45 on each disorders. The scintillation camera with  $^{131}\text{I}$ -BSP have revealed very useful method for dynamic analysis of the liver and biliary tract diseases. On some patients with chronic hepatitis or liver cirrhosis, the intrahepatic biliary stenosis was demonstrated as a triangle shaped high intensity area independent from the configuration of gall bladder. The obscure and indistinct liver configuration was observed in the patients with obstructive jaundice caused by pancreatic calculus, cholelithiasis and the cancer of bile duct.

As a conclusion,  $^{131}\text{I}$ -BSP was very useful for analysis of the diseases of liver and biliary tracts with the combination of blood cpm evaluation and scintiphotography as well as the observation of bile.