and at 2 hours later, there is a concentration of activity filling the area of the defect. In 6 hours image the activity of the liver decreased, but retention was seen in the central portion yet.

Case 2) 23 years old, female. choledochal cyst (dilatation of the bile duct and intrahepatic stones).

Serial scintigraphy showed a dilated bile ducts image around the porta hepatis in the early phase, and even in 5 hours later it stayed.

Case 3) 26 years old female. choledochal cyst

Serial scan showed the liver to be compressed by a large abdominal mass. In 15 minutes, later scan ^{131}I-BSP accumulated in the mass and stayed for 24 hours. No activity was seen in the intestine.

Case 4) 35 years old female, choledochal cyst. 3 hours after injection the high activity was seen in the porta hepatis in the size of 5 × 8 cm, 5 hours later its activity transfered from liver to intestive partialy.

Case 5) 41 years old, female. choledochal cyst. In the 120 minutes image, two hot area was seen in the area of the lower portion of the right lobe, 3 hours later one activity was disappeared. At laparatomy a choledochal cyst and dilated gallbladder was disclosed.

The common bile duct and gallbladder were not visualized with cholangiography and drip infusion cholangiography in these 5 cases and revealed with PTC or direct infusion during operation. Follow up study has being done with functional images with ^{131}I-BSP.

^{131}I-BSP Hepatobiliary Function Test with Deconvoluted Analysis

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Dynamic data from ^{131}I-BSP hepatobiliary function test were deconvoluted by an on-line computer system to obtain the transfer function which should represent the hepatic response function when the dose of ^{131}I-BSP were injected as a single bolus into hepatic artery. This transfer function was utilized to have information on excretory function of the liver for ^{131}I-BSP in terms of the transit time excluding the effect of hepatic blood flow. Following intravenous injection of 300 μCi of ^{131}I-BSP, sequential data were recorded by an on-line computer system (DAP-5000N) at 30 second intervals in 64×64 matrix form for a period of 40 min.

Regional hepatogram for each element of the matrix was deconvoluted using time-activity curve over cardiac region as input function. For each of the regional transfer function, two parameters of mean transit time (MTT) and initial height (IH) were estimated. The latter was assumed to be an index of regional hepatic blood flow. Estimated values were displayed on CRT such that the brightness was proportional to the estimated values, followingly recorded by polaroid camera as functional images. MTT for the whole liver region was also estimated and automatically printed out. In addition, the effective hepatic blood flow (EHBF) was determinated from the time-activity curve over cardiac region using Cohen's method. In normal subjects functional images for both parameters of MTT and IH showed diffuse distribution.

Estimted EHBF was 600–800 m*l*/min and MTT for the whole liver was 12–15 min.

In some obstructive diseases MTT images showed focally delayed MTT as hot area in hilar region of the liver, that was not evident in original serial scintiphotos. In diffuse parenchymal diseases such as liver cirrhosis or hepatitis, both MTT and IH images showed irregular distribution.

MTT for the whole liver was prolonged to 30–50 min. and EHBF was decreased to 200–500 m*l*/min. In 24 patients studied, there was a good inverse relationship between EHBF and MTT ($\gamma = -0.787$, $p < 0.001$).