flow in ml/100 gm/min was calculated using the following equation:

$$\text{Hepatic blood flow} = \frac{100 \cdot k \cdot \lambda}{\rho}$$

where k was the slope of washout curves, λ the hepatic to tissue blood partition coefficent (assumed to be 0.74), and ρ the specipic gravity of the liver (assumed to be 1.02).

In all but one patient, right lobar flow values were equal to or greater than the left one. The right lobar flow was 86.20±12.83 ml/100 gm/min in 3 patients without liver disease, 75.12±14.54 ml/100 gm/min in 12 patients with chronic hepatitis and 51.24±17.13 ml/100 gm/min in 11 patients with liver cirrhosis. These results suggest that hepatic tissue blood flow was significantly decreased in patients with liver cirrhosis. Gamma camera images of initial xenon distribution in combination with monitor of the washout curves over the liver also provides more information on the presence of extra- and intrahepatic shunts. Therefore, this technique appears to be clinically useful in evaluation of hemodynamic phenomena associated with liver disease.

Evaluation of the Computer Processing on the Hepatic RI Examination with Using Tc-99m-Phytate

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The purpose of this study is to evaluate the computer processing system with which hepatic accumulation ratio (K_L) and spleen/liver uptake ratio using Tc-99m-Phytate are automatically evaluated. As concerned with the liver processed images, delineation of the defect are discussed.

Method

After intravenous injection of Tc-99m-Phytate a dose of 1.0 mCi, serial 64×64 matrix liver processed images are stored on a magnetic disk for 20 minutes. Region of interest are selected on the liver and hepatic accumulation curve are recorded on the hard copy unit. According to the newly planned program, the expected curve, which is fitted to the original curve within a error rate of 3% and liver accumulation rate are obtained. On the 64×64 matrix images, ROI are selected on liver and spleen. Maximum counts in the selected area of liver and spleen are compared and spleen/liver uptake rate (S/L) are calculated. Delineation of the defect on the liver processed images are discussed on the 64×64 matrix images of various total count as following 50 K, 100 K, 300 K, 500 K, 700 K, 900 K counts.

Results

The automatically evaluated KL in various liver diseases are 0.277±0.075 in chr. hepatitis, 0.225±0.072 in liver cirrhosis, 0.369±0.099 in metastatic liver tumor, 0.226 in hepatoma, 0.198 in liver cyst and 0.328±0.056 in controls.

On the other hand, spleen/liver uptake rate in various liver diseases are as followed: 18±14% in chr. hepatitis, 51±27% in liver cirrosis, 59% in hepatoma and 32±9% in metastatic liver tumor. These informations are very useful especially on the diagnosis of liver cirrhosis. The best delineation of the defect using IAEA liver phantom are obtained on the total counts of over 500 K.