Evaluation of Per-Rectal Portal Scintigraphy in Hepatic Cirrhosis.

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Methods

Ten mCi of $^{99m}TcO_4^-$ in a 3 m*l* solution was instilled into the upper part of rectum. Scintigrams were taken sequentially at 15-second interval by time-lapse camera and the radioactivities were recorded with VTR for ten minutes.

Results

1. The scintigrams by time-lapse camera.

In 3 patients without hepatic or cardiac diseases and 8 cases with chronic hepatitis, the scintigrams visualized the portal system, liver and heart successively.

In 20 of 21 cases with hepatic cirrhosis however, the scintigrams did not visualize the portal system and liver but clearly visualized the heart.

2. Radioactivities at the liver or heart sequentially followed with VTR.

a) The appearance-time

In chronic hepatitis, appearance-time of radioactivities at the liver was earlier than that at the heart. But, in 19 of 21 cases with hepatic cirrhosis, appearance-time at the liver was later than that at the heart.

b) The speed of initial increase of radioactivities on the liver was compared to the speed on the heart.

The ratio (liver/heart) was more than 1.6 in normal subjects, more than 0.6 in cases with chronic hepatitis but less than 0.6 in 13 of 21 cases with hepatic cirrhosis.

c) The shunt index.

The shunt index was less than 10% in normal subjects, and 10% to 21% in chronic hepatitis.

The index was more than 25% in all cases with hepatic cirrhosis and more than 35% in 19 of 21 cases with hepatic cirrhosis.

In conclusion, our per-rectal portal scintigraphy is a non-invasive, useful method for analysing the portal cirrculation and has great diagnostic significance particularly in hepatic cirrhosis.

Measurement of Hepatic Plasma Volume Using Tc 99m Albumin by Double Injection-Single Sampling Methode

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In order to measure the hepatic plasma volume, mean transit time of plasma in portal circulation of the liver was measured by the double injection single sampling method. Change of plasma volume in the liver before and after the hepatic nerve stimulation was also assessed.

Principle

The mean transit time ($\bar{t}1$) was calculated by a equation

$$\bar{t}\frac{1}{XO\ XT}(X1(t)-Xv(t))dt \quad \cdots\cdots\cdots(1)$$

where XO is the activity in the organ after the injection, before any indicator is washed out. XT is the background activity. $X1(t)$ is the activity curve contributing external counts following a bolus injection of the indicator at the inlet to the liver. $Xv(t)$ is the activity curve recorded by the external counting system following outlet bolus