MAA. Consequently, MAA injected into the spleen is trapped in the hepatic sinusoids in normal subject and can not appear in the pulmonary system without the presence of portal systemic shunts. By performing the scintiscanning over the liver and lung, we can see the accumulation of MAA exclusively in the liver and spleen in normal subjects. On the other hand, in cases with portal systemic shunts, some amount of MAA which has by-passed the liver, is finally trapped by the lung capillary visualizing the lung scintigram. And the degree of the appearance of radio-activity in the lung can be used as an indication of the shunted blood flow.

Fourteen cases among 16 cirrhotics showed the presence of the collateral circulation of a spleno-portal system. Three hemolytic anemias, 4 hepatitis and 2 cirrhotics showed no accumulation of radioactivity in the lung indicating the absence of shunts. The simultaneous record of the radioactivity accumulation curve over the liver and lung provided us with more detailed information about the portal circulation than the previous isotopic splenoportography. The initial tall hump of the liver curve recorded in some cirrhotic cases with marked accumulation of MAA by scintigram, suggested the possibility that MAA introduced into the liver via portal vein, passed through intra-hepatic shunts.

The MAA appearance time to the liver after splenic injection was almost same between cirrhotic cases and non cirrhotics, while the lung appearance time through collateral veins ranged widely in case to case.

^{131}I-MAA was concluded to be the suitable and useful pharmaceuticals for the study of portal circulation in liver cirrhosis, too..

Variation of Liver Blood Flow Index According to the Location of Scintillation Detector

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External counting method for the measurement of hepatic blood flow index using colloidal radiogold is useful in clinical examination.

In our study, variation of liver blood flow index (Kn) according to the location of scintillation detector over liver was studied in 21 patients. And variation of liver blood flow index calculated by different 18 examiners was also studied in 2 patients.

Methods

2~4 scintillation detectors were placed on different parts over the liver in a patient at the same time. Then 55 accumulation curves in 21 patients were recorded.

And also liver blood flow indexes of 6 accumulation curves in 2 patients were calculated by different 188 examiners and compared.

Results

Some patients have a marked variation in K according to the location of scintillation detector. (Ex.:1 K_1 0.103, K_2 0.147, K_3 0.100, Mean 0.117, Ex.2:K_1 0.141, K_2 0.187 K_3 0.147, K_4 0.187, Mean 0.166)

On the other hnad, in other patients liver blood flow index varies only a little. (Ex. 3:K_1 0.124, K_2 0.120 Mean 0.122, Ex.4: K_1 0.114, K_2 0.122 K_3 0.117, Mean 0.118)

In former group of patients, 2nd decimal number of liver blood flow index varies easily according to the location of scintillation detector. And even in latter group of patients, third decimal number varies according to the location of detector.

It was also found in our investigation that

the value K varied depending upon subjective factors, i.e. the saturation level decided by the individual, plotting the logarithm of activity against time, drawing the slope and so on. (Ex. 1:Mean 0.113 S.D. 0.023, max. 0.144 min. 0.071 Ex. 2: Mean 0.117, S.D. 0.022, Max 0.151, Min. 0.086 Ex. 3: Mean 0.1006, S.D. 0.015 Max. 0.151 Min 0.091)

Like this we know 2nd decimal number varies according to different calculators even in the same accumulation curve.

Conclusions

We must deal with liver blood flow index as it's second decimal number sometimes varies in the same patient at the same time according to the location of detector and subjective factors. And it seems meaningless to compare third decimal number in liver blood flow index.

Studies on Liver Circulation by RI in Hepatic Diseases Fluctuations due to changes of posture resulting in changes of circulation time and arterial, portal blood flow in liver

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At the previous meeting we reported that in liver clearance tests with ^{198}Au-colloid conducted in various liver diseases in our attempts to find out changes in liver circulation due to changes of posture we studied liver uptake indices, KL and K'L, both at supine and sitting postures, and found that there was a decrease of K'L in the control and chronic hepatitis while there was a slight increase of it in liver cirrhosis. This time, for the purpose to reconfirm the increase of K'L in still a greater number of patients as well as to elucidate its mechanism, prior to the intravenous injection of ^{198}Au-colloid, we studied, using RISA, the liver circulation time, especially the commencement time of cervical, arterial and portal vein circulation, arterial liver blood flow ratio, cardiac output and the amounts of systemic blood flow, and on the basis of this study we calculated the amounts of liver blood flow, cervical, arterial and portal blood flow. At first in spine posture we placed 2 detectors just above the heart and the liver and measured blood pressure and palpitations. Then 20 μc RISA were rapidly injected intravenously at supine posture, and then similar procedures were repeated at sitting posture and took radiocardiograms and radiohepatograms, and then, after a certain interval the blood was drawn, and the liver uptake curves of ^{198}Au-colloid both at supine and sitting postures were reccorded. As the result it was found that the commencement time of liver arterial and portal blood flow (a~b and a~d time) was prolonged in control and chronic hepatitis groups whereas it was shortened in liver cirrhosis.

Liver arterial blood flow ratio at sitting posture increased in control and chronic hepatitis while it decreased in liver cirrhosis. As for the cardiac output at sitting posture, it was clearly increased in the control but in chronic hepatitis it was rather diminished, and no significant change in liver cirrhosis. As for the mutual relationship among the fluctuation rate of KL due to ^{198}Au-colloid and a~b and a~d time, cervical, arterial blood flow ratio, and the fluctuation rate of cardiac index due to the changes of posture, both the control and chronic hepatitis did not show any mutual relationship; liver cirrhosis showed a marked decrease in both a~b and a~d time; but both a—b time ($r=0.46$) and a—d time ($r=0.42$) proved to P 0.05. The amount of systemic blood flow in liver cirrhosis was rather slightly decreased as compared with the control. The hepatic blood flow was clearly decreased in the control, but no significant change in chronic hepatitis and liver cirrhosis. As for the blood flow in cervical arterial and portal vein, both were decreased in the control whereas portal blood flow was slightly raised in liver cirrhosis.