

In a normal case, colloidal particles, passing through the liver, were extracted 4.47 percent per sec. (extraction factor). And extraction ratio by one passage was 44.4 per cent. The distribution of transit times was similar to Poisson distribution and indicated that there is negligible fraction having transit time less than 5 sec. The mean transit time was 13.67 sec. The results of the analysis in three cases with cirrhosis of the liver were reported.

In the first case, transit time ranged widely from below 2 sec. to over 30 sec. The distribution had two peaks, which suggested distributions of shunt and sinusoidal pathways. The fraction of transit time less than 5 sec. was about 40 per cent. The extraction factor was 1.55 per cent per sec. and extraction ratio was 16.3 per cent supporting that the distribution of transit times was affected by shunt pathways.

In the second case with cirrhosis of the liver, the transit times distributed from less

than 2.5 sec. to more than 40 sec. and the maximum fraction was between 5.0 and 7.5 sec. The mean transit times was 11.9 sec. The extraction factor and the extraoction ratio were reduced markedly.

The third case with cirrhosis of the liver was severe, having ascites in much degree. The transit times distributed for the most part less than 10 sec. and fraction of less than 5 sec. was more than 50 per cent. The mean transit time was 6.44 sec. in this case.

We reported also that the intrasplenic sudden injection of ^{198}Au colloid was helpful for detecting extrahepatic shunt pathways. In normal case final level of hepatic uptake is slightly lower than the height of initial peak. But in cases having extrahepatic shunt, the final level was much higher than the height of initial peak. The simultaneous counting on the lung and the head serve this purpose by comparing with appearance of peak on the liver.

Comparative Study in External Counting Method of Hepatic Blood Flow Index and Circulated Blood Flow Disappearance Index Using Colloidal Radiogold

T. TSUCHIDA and T. OKA

Osaka Shirokita Municipal Hospital, Osaka

H. OCHI

The investigation of blood flow of the liver by using colloidal radiogold is one of the most useful examination for diseases of the liver. When we calculate the hepatic blood flow index (Kl) from the liver accumulation curve of radioisotope, the influence of the location of the disease and method of physical and physiological detection are problems. To avoid these miscalculation and influence we checked the external head curve and calculated the circulated blood flow disappearance index (Kb) by plotting it on the semilogarithmic graph. We calculated $T_{1/2}$ from the slopes and intercepts of the components of the corrected curve, then got the circulated blood flow disappearance index (Kb) and the hepatic blood flow index (Kl). In 62 cases, Kb was

0.347~0.122 (average 0.204 min.) and Kl was 0.347~0.079 (average 0.150). The comparison of these data with liver scintigram was performed.

1. Nothing particular in liver scintigram and little difference in Kb and Kl: 22 cases (35.5%).

2. Nothing particular in liver scintigram and large difference in Kb and Kl: 4 cases (6.4%).

3. Abnormal liver scintigram and little difference Kb and Kl: 17 cases (27.5%).

4. Abnormal liver scintigram and large difference Kb and Kl: 19 cases (30.6%).

In Group (2) the liver function tests were almost all abnormal.

In Group (3) we found enlarged liver scin-

tigram, appearance of the spleen in scintigram, etc.

In Group (4) we found no functioning area in the liver (space occupying lesion), large spleen, bone marrow uptake in the scintigram,

etc.

So, we believe the comparison of Kb and Kl gives us useful information in performing liver scanning.

The Influence of Hepatic Periarterial Neurectomy on Dogs with Livercirrhosis Caused by Intravenous Administration of Radioactive Gold Colloid

M. AMANO, Y. SHO, T. UGA and H. KADONO

The Second Department of Surgery, Nagasaki University School of Medicine, Nagasaki

For the liver diseases such as liver cirrhosis surgical decompression of portal hypertension has been performed, but there have been still no radical treatments for it. We have studied hepatic periarterial neurectomy on normal and abnormal dogs with liver damage which were produced by CCl₄ intoxication, and the increase of hepatic blood flow due to increased hepatic artery blood flow was observed. In this series the dogs with liver damage were produced by several months' administration of

radioactive gold colloid. Then we observed pathological changes as liver cirrhosis with ascites. At the period of light liver fibrosis in these dogs hepatic periarterial neurectomy has been performed, observing the increase of hepatic blood flow. Liver blood flow were estimated by the radioactive gold colloid technique before and after hepatic periarterial neurectomy. It is, therefore, considerable that this surgical treatment could inhibit the progress of liver cirrhosis.

An Application of Blood Disappearance Rate of Colloidal ¹⁹⁸Au to Interpretation of Photoscan of Liver

R. PAK

Dept. of Radiology, Catholic Univ.

SINCE the appearance of a preliminary report on the "method for visualization of configuration and structure of liver" by Friedell, MacIntyre and Rajali in 1951, the scintiscanning of the liver has been greatly improved and markedly refined in both instrumental and radiopharmaceutical aspects. And the scanning is now accepted as a standard method of studying the liver of the internal architecture as the size, shape and position.

The lack, however, of diagnostic specificity of most of the scan findings such as "cold" area or "mottling" and alteration in external characteristics of the liver has undoubtedly

limited the value of this new diagnostic modality.

The colloidal particulates of radiogold have also been used in the investigation of blood flow of the liver. As early as 1952, Dobson pointed out that radioactive colloidal particulates injected into the vein are quite effectiey eliminated from the peripheral blood stream by Kupffer cells of the liver. This principle, being the rationale of scintiscanning, has been applied to measure the hapatic blood flow in both normal and cirrhotic subjects.

The disappearance rate measurements or "retention" rate study of colloidal radiogold