
After a bolus injection of 10 mCi of Tc-99m phytate, scintigrams were obtained sequentially for up to 1 minute. The peak time of the kidney curve corresponded to the junction of the arterial and portal phases of the hepatic curve, and the portal component was calculated as the ratio of portal to total blood flow. Results: 1) The portal components ranged from 64% to 76% and the mean was 71.3% in normal subjects (n=21). The mean portal component was 63.6% in C(15) and 58.6% in C(16). In the cases of hepatic cirrhosis, the mean of the portal component was 39.4% (n=12). 2) The portal component was significantly lower in the cirrhotic patients with esophageal varices than that in the patients without esophageal varices. 3) Portal components were calculated in 22 patients before and after sclerotherapy. A paired t-test showed a significant rise in the values of portal components between the measurement before and just after treatment. But it showed a significant fall in the values of portal components between the measurement just after and two months after treatment. Whereas, portal components didn't show a significant change between two months and one year after treatment.

HEMODYNAMICS IN ESOPHAGEAL VARICES STUDIED BY RADIONUCLIDE SPLENOPORTOGRAPHY.


The portal hypertension causes collateral mesenteric venous reflux and varices. Among others the esophageal varices have practically significant pathways that have influence on the patient's prognosis. A small amount of percutaneously injected into the spleen clearly visualized esophageal varices and allowed us to analyse their hemodynamics without any physiological disturbance. Twenty three cases were so far studied without complication. The study was concentrated in evaluating the hemodynamical changes in esophageal varices after the endoscopic sclerotherapy. Using gamma fitting method, the areas under the time-activity curves of the liver and varices were calculated. Changes in the varix fractions of venous blood from the spleen before and after the sclerotherapy were well correlated with the endoscopic observation and with the decrement of splenic cholic acid. The optical as well as quantitative evaluation of blood flow in the esophageal varices is a useful method of evaluating the effect of sclerotherapy.

A NEW METHOD OF MEASURING THE RATIO OF PORTAL BLOOD FLOW TO TOTAL HEPATIC BLOOD FLOW BY RADIONUCLIDE ANGIOGRAPHY. M. Nagomi, M. Hasegawa, K. Kiu, H. Takenaka, A. Shinotsuka and T. Hishida. Department of Radiology Showa University School of Medicine, Tokyo.

We developed a new analytical method for Tc-99m phytate and Tc-99m PMT dynamic curves in the spleen blood flow and hepatic blood flow by calculating the improved versions of the following formulas. 1) Tc-99m phytate hepatic accumulation curve: C(t)=C(0) (1-Ke/Ka). 2) Tc-99m PMT hepogram: C(t)=Cs (t-Ket1 - Ke/Kt1). 3) Cardiac disappearance curve: C(t)=C0 - Kt1 C(0) - Ke/Kt1. where: C0: count rate at time 0, C(t): count rate at time t, C(0): count rate at time 0, Cs: count rate at time 0 for Kg, Ka: accumulation rate, Ke: excretion rate, Kt1: uptake rate, Kd: disappearance rate, Ke: appearance rate for second phase. The loads for the liver were leg exercise, administration of meal and transcatheter arterial embolization therapy (TAE). The leg exercise was performed in supine position for 13 min on a ergometer at work loads of 25 watt. During leg exercise, Kt and Ke decreased by 26% and 19%, respectively. After TAE, Ke increased by 45% and 12% respectively. On the other hand, Ke didn't show the constant tendency. After TAE, Ke in the non-tumor regions reduced markedly.

EVALUATION OF EFFECT OF VARIOUS LOADS FOR THE LIVER USING RADIONUCLIDE DYNAMIC CURVES.