A NEW METHOD FOR MEASUREMENT OF HEPATIC ARTERIAL AND PORTAL BLOOD FLOW WITH XE-133. Y.Yasuohara, K.Murase, S.Miyachi, K.Akamatsu, Y.Watanabe, H.Mogami, A.Ito, K.Hamamoto. Ehime University School of Medicine, Ehime.

Liver consists of dual vascular systems and it is important to know these blood flow separately for the assessment of various disease state. And also it is important for determining the indication for TAE and predicting the prognosis in the cases with hepatoma.

We have developed a new technique to measure the portal blood flow using balloon occlusion technique. In order to measure the total hepatic blood flow, Xe-133 was injected into the common hepatic artery. Sequentially, Xe-133 was injected into the proper hepatic artery followed by interception of arterial blood flow by balloon occlusion to measure the portal blood flow. And then we calculated these blood flows by using initial slope method.

We found the mean total hepatic blood flow of 82ml/100g/min and the mean portal blood flow of 46ml/100g/min in the cases without liver cirrhosis. The total hepatic and portal blood flow decreased when liver cirrhosis became severe. Our results well corresponded with the values obtained by the other methods.

This method was considered to have high accuracy and was thought available for measuring the portal blood flow separately.

FACTOR ANALYSIS IN INTRHEPATIC HEMODYNAMIC STUDIES WITH FIRST PASS RADIONUCLIDE ANGIOGRAPHY

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Factor analysis can automatically provide specific factors which correspond to various dynamic structures in a given organ (Di Paola and others, 1975). Using factor analysis algorithms, we showed quantitative assessment and images of portal blood flow to liver parenchima.

Four patients were studied. Two case of partial infrahepatic portal vein obstruction due to hepatocellular carcinoma, one case of main portal obstruction with portal vein thrombosis due to liver cirrhosis and one normal control (liver hemangiomata). The aquisition of images was made according to a conventional cardiac study after injection of Tc-99m HSA 200uCi. The anterior view was used. Analyses were made on sequences of 30 images taken with a duration of one second after radionuclide bolus was arrived in abdominal aorta.

Our study shows that factor analysis can be imaging to component of portal blood flow in the liver parenchima, even when it has partial abnormality.

Factor analysis is useful method for liver dynamic study.

EVALUATION OF HEPATIC BLOOD FLOW OF CHRONIC LIVER DISEASE USING VENOUS INJECTION OF XE-133.

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We evaluated the hepatic blood flow in chronic liver disease using venous injection of Xe-133 which is noninvasive and a few rate of recirculations. In this series, 12 patients with acute hepatitis, 13 with liver cirrhosis, 6 with chronic active hepatitis, 5 with fatty liver and 10 controls were performed this method. The patient at supine position whose hepatic right lobe had been marked by echo gram, fitted face mask which was connected with Xe gas trap system.

The two scintillation detector of dynamic function measurement system were placed over the hepatic right lobe and the lung. The time activity curve were obtained from two scintillation detector and these data recorded to computer after injection of 10 mCi Xe-133.

Hepatic curve from detector consisted two compartments. The mean ± sd of hepatic blood flow were 98 ± 18 ml/min/100g in controls, 101 ± 13 in acute hepatitis, 100 ± 10 in chronic active hepatitis, 70 ± 16 in liver cirrhosis and 68 ± 14 in fatty liver. Hepatic blood flow of acute and chronic active hepatitis were increased more than controls and liver cirrhosis and fatty liver group were decreased less than controls.