

MEANING OF PORTAL SHUNT INDEX BY PER-RECTAL PORTAL SCINTIGRAPHY

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It was previously reported that per-rectal portal shunt indexes by per-rectal portal scintigraphy with $^{99m}\text{TcO}_4^-$ solution correlated well with portal shunt indexes by trans-splenic injection with ^{131}I -MAA in animal study.

The indexes by trans-splenic injection were related to collateral circulation on main portal venous system such as splenic vein or portal vein but per-rectal portal shunt indexes were related to collateral circulation on inferior mesenteric vein and portal vein.

In this animal study, collateral flow via portal venous system at the upper part of rectum to inferior caval vein were examined.

Ratios of collateral flow via lower part of portal system to inferior caval system were calculated from the radio-activities of serial plasma in lower part of inferior caval vein and left ventricle after the instillation of $^{99m}\text{TcO}_4^-$ into the upper part of rectum in rats. On healthy rats, ratios of the collateral flow via lower part of inferior caval vein were estimated less than 1% in left ventricle. On rats with hepatic cirrhosis, they were estimated more than 30% in left ventricle.

In clinical studies, these collateral pathway was observed and inferior caval vein was visualized without image of portal vein on per-rectal portal scintigram in a patient with hepatic cirrhosis.

It is suspected that lower part of portal venous system at the upper part of rectum such as superior rectal vein easily anastomoses with the middle and inferior rectal vein of the caval system according to the elevation of portal venous pressure.

CLINICAL SIGNIFICANCE OF INTRAHEPATIC SHUNT INDEX MEASURED BY PERCUTANEOUS TRANSHEPATIC PORTOGRAPHY

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Using the technique of percutaneous transhepatic portal vein catheterization, measurement of intrahepatic shunt was carried out in 33 patients with various liver disease, consisting of 26 cases of cirrhosis, 3 cases of idiopathic portal hypertension, and 4 others.

Intrahepatic shunt index in cases of liver cirrhosis was higher compared to other cases. The degree of intrahepatic shunt was correlated with serum albumin level, plasma retention rate of ICG, and portal vein pressure. It was also found that cirrhotic patients in whom intrahepatic shunt was of high degree tended to have jaundice, ascites, and history of hematemesis. Patients with liver cirrhosis was classified in accordance with Child's criteria in order to estimate surgical risk. Poor risk group had higher degree of intrahepatic shunt.

It was suggested that the measurement of intrahepatic shunt was of clinical use for assessment of hepatic functional reserve, prognosis of liver cirrhosis, and operative risk.