

**111. CLINICAL AND PATHOLOGICAL ASPECTS OF IDIOPATHIC
PORTAL HYPERTENSION WITH SPLENOMEGALY
(SO-CALLED BANTI'S SYNDROME):
ON THE HEMODYNAMIC CHARACTERISTICS**

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Splenic blood flow was measured in 12 patients including 6 patients with idiopathic portal hypertension (I. P. H.) by the combined use of ^{85}Kr and celiac catheterization technique. I. P. H. was defined as an unexplained portal hypertension with gross splenomegaly without either cirrhosis or extrahepatic portal obstruction. Splenic blood flow per 100 g. tissue weight was 82 to 140 (mean 101) ml/min in 3 controls, 50 to 73 (mean 67) ml/min in 3 cirrhotics and 63 to 160 (mean 102) ml/min in 6 cases of I. P. H. Total splenic blood flow calculated from the spleen weight obtained by the operation or autopsy, was 240 to 1440 (mean 780) ml/min in 5 cases of I. P. H. and 150 ml/min in one liver cirrhosis.

It was previously reported by us that the peculiar findings of celiac arteriography were observed in this disorder, which showed dilated splenic artery and narrowed hepatic artery, suggesting the increase of splenic blood flow and decrease of hepatic arterial flow. The absence of intrahepatic shunts and development of extrahepatic shunts, evidenced by the shunt detection method using ^{131}I -MAA were also reported.

In addition to the intrahepatic presinusoidal block, which has been insisted as the cause of portal hypertension in this disorder, several characteristic features in portal hemodynamics were pointed out, such as, 1) the increase of splenic blood flow, 2) the decrease of hepatic arterial flow and 3) the development of extrahepatic shunts and absence of intrahepatic shunts.

**112. THE STUDIES ON PORTAL CIRCULATION: THE EFFECTS
OF SOME DRUGS ON THE SMALL BLOOD VESSELS
OF THE INTESTINE AND LIVER OF RAT**

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The effects of some drugs on the small vessels of the intestine and the liver of rats were studied microscopically. The observation was made by using of "FSC Photographic Apparatus of Cutaneous Mucous Blood Vessel", and drugs was administrated intraperitoneously.

(1) Noradrenalin

The superficial venen of the liver became sharp, and the color of the hepatic parenchyma faded. These show the decrease of the intrahepatic blood volume. The arteriole and metaarteriole of the intestine contracted remarkably, the metaarteriole especially.

It was thought that the increase of the resistance of the intrahepatic blood vessels and the contraction of the intestinal vessels was the principal changes.

(2) Pitressin

The superficial venen of the liver contracted slightly, and the capillary became fine and sharp. The color of the hepatic parenchyma faded. The intestinal arteriole and the metaarteriole contracted, especially the metaarteriole remarkably, and the arterio-venous-anastomoses was blocked. So that, the principal changes caused by pitressin was the decrease of the portal blood flow.

(3) Bethanechol

The superficial postcapillary venule became sharp and distinct. The intestinal metaarteriole and the precapillary dilated and the arterio-venous-anastomoses appeared distinctly. Therefore,

it was caused by bethanechol that the resistance through the portal blood vessels was reduced.
(4) Scopolamin butyl bromide

The superficial venen of the liver dilated and the hepatic parenchyma blood flow resulted in a remarked increase.

The intestinal precapillary and the capillary dilated. The decrease of the blood flow through the portal area caused by the fall of the blood pressure was the chief changes.

(5) Adenosin triphosphate

It was seen that the superficial venen of the liver dilated and the blood flow of the hepatic parenchyma increased. The intestinal blood vessels did not show distinct changes.

113. HEPATIC CIRCULATION RECIPROCAL RELATIONSHIP BETWEEN HEPATIC ARTERY AND PORTAL VEIN

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Despite wide interest and investigation concerning the relationship between portal blood flow and hepatic artery blood flow, it remains incompletely understood. In order to make clear hepatic hemodynamics, we used direct electromagnetic blood flowmeter and measured blood flow in the hepatic artery and portal vein in some patients with gastrointestinal lesion and 30 healthy mongrel adult dogs. In the patients, hepatic arterial blood flow was slightly increased but portal venous blood flow was decreased with the course of operation. In the dogs, mean hepatic arterial blood flow value was 147 ml/min and mean portal venous blood flow value was 332 ml/min. By the hepatic artery occlusion without injury of hepatic plexus, portal venous blood flow slightly decreased its flow and no significant change in portal and arterial pressure were obtained. Complete occlusion of portal vein was resulted immediate rise in portal pressure and severe decrease in hepatic arterial blood flow and arterial pressure. When portal blood flow changed to 1/2 value, same phenomena were observed. Portal venous flow diversion was produced by performing side-to-end shunt between the splenic vein and the right common iliac vein using a T-tube during the portal vein occlusion. By this procedure the portal venous pressure was reduced to the former level but there was compensative increase of hepatic arterial blood flow.

114. MEASUREMENT OF INTRAHEPATIC SHUNTED BLOOD FLOW BY MEANS OF D-GALACTOSE-1-C¹⁴; CLINICAL AND EXPERIMENTAL STUDIES

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Clinical studies revealed slight increase of intrahepatic shunted blood flow in chronic hepatitis and other kinds of fibrosis, and marked increase in hepatic cirrhosis. Slight increase was also observed in patients of primary hepatic carcinoma without cirrhosis and in patients of metastatic carcinoma. Of 11 patients with presinusoidal portal hypertension, only one showed increased per cent intrahepatic shunt. As per cent intrahepatic shunt of patients with acute viral hepatitis was the same as in controls, determination of the intrahepatic shunted blood flow by the D-galactose-1-C¹⁴ method is thought to be little influenced by hepatocellular necrosis and degeneration.

These clinical studies were confirmed by animal experiments. A D-galactose-1-C¹⁴ solution was injected into the superior mesenteric vein of rats with various hepatic injuries. Ten seconds after the injection, the hepatic artery and the portal vein were ligated, and the liver was