

without demonstrating the changes in the internal structures. On the other hand, the hepatic arteriography showed the lesion as the direct findings, such as the increase in

vascularity and tumor stain. Therefore, the hepatic arteriography showed the details of the internal structures in higher degree when compared with that of liver scanning.

A Comparison of Hepatoscintiscanning and Selective Hepatic Angiography

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The livers of 35 patients were studied by cintiscanning and selective angiography.

In these patients, diagnosis of 20 cases were established by autopsy, liver biopsy, and so on. (metastatic liver tumor 6, primary liver tumor 1, liver cirrhosis 3, Banti's syndrome 3, polycystic liver 2, Budd Chiari's syndrome 1, miscellaneous 4).

Results

1. There is no remarkable difference in the detectability of space occupying lesions between liver scanning and selective angiography.
2. Scintiscanning is favorable to know size

and extent of space occupying lesions compared with angiography.

3. It is possible to know the kind of space occupying lesion by selective angiography (ex. differential diagnosis of cyst and tumor, vascularity of tumor).
4. Diffuse diseases such as hepatic cirrhosis and Banti's syndrome are diagnosed in almost cases by each method.
5. Sometimes marginal space occupying lesions of liver are hard to detect by only scintiscan.

In such cases selective angiography give another available information very often.

Clinical Evaluation of Scintiscanning of Abdominal Organs Following Selective Intraarterial Injection of ^{131}I -MAA, with Special Reference to Comparison with Findings in Arteriography and Parenchymal Scintiscanning

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Following selective arteriography according to Seldinger's technique, ^{131}I -labeled macro-aggregated albumin (^{131}I -MAA) in saline was injected selectively into the celiac,

superior mesenteric or renal arteries in a total of 24 patients with various hepatic or renal diseases or abdominal tumors, and scintiscanning was performed thereafter as

18 of the patients, liver and spleen scintigrams were obtained after intravenous administration of ^{198}Au - or $^{99\text{m}}\text{Tc}_3\text{S}_7$ -colloid solutions. Renal scintiscanning was performed in 2 cases following intravenous injection of ^{203}Hg -Neohydrin or ^{203}Hg -Salylgan. In 16 cases, ^{131}I -MAA was also injected into the spleen and subsequent scintiscanning was obtained over the hepatic and pulmonary areas to estimate the distribution of the portal blood stream and to detect the amount of portosystemic shunting. Materials consisted of 5 cases of liver cirrhosis, 6 with primary splenomegalic portal hypertension, 5 with hepatic tumor, 4 with extrahepatic abdominal tumor, each one with Grawitz's tumor and with hydronephrosis, and 2 with other diseases. Diagnosis was confirmed at operation in 8 cases and at autopsy in one.

In cirrhosis of the liver, the hepatic arterial vascularity was not decreased and peripheral branches were tortuous and irregular in caliber in arteriography. Scintiscan following injection of ^{131}I -MAA into the celiac artery gave a dense shadow over the hepatic area, while scanning after an intravenous radioactive colloidal solution revealed a decreased hepatic shadow and appearance of radioactivity over the spleen. In primary splenomegalic portal hypertension, arteriogram revealed a large splenic artery and the attenuated hepatic arterial branches which appeared straightened in their course. Scintigram following injection of ^{131}I -MAA into

the celiac artery was characterized by a huge splenic shadow and very poor visualization of the hepatic area. Liver scintigram using radioactive colloidal solution revealed a considerable shadow over the hepatic area. By pulmonary scanning following intrasplenic injection of ^{131}I -MAA, it was demonstrated that the amount of blood passing through the portosystemic shunts was large. In primary cancer of the liver, intraarterial perfusion scan with ^{131}I -MAA revealed a predominant accumulation of the radioactivity in areas which showed findings of tumor vessels and tumor stains in arteriography. Radioactivity was found to be distributed in intact hepatic areas after intrasplenic injection of ^{131}I -MAA as well as intravenous administration of radioactive colloidal solution. In a case with leiomyosarcoma of the stomach, a contour of the tumor was clearly depicted by scintiscanning following introduction of ^{131}I -MAA into the celiac artery. ^{131}I -MAA introduced into the left renal artery in one case with a large Grawitz's tumor gave a picture suggesting an area of central necrosis with a poor vascular supply. In this case, functioning parenchymal tissue in an upper small area of the kidney was demonstrated by scintigram after ^{203}Hg -Neohydrin.

Combination of the procedures gave various contrasts depending on the distribution of blood stream and the degree of parenchymal tissue damage of the diseased organs.

Study on the Liver Function of the Experimental Liver Homotransplantation

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In order to study the liver function in the experimental orthotopic and heterotopic liver homotransplantation, we have used the external counting method using radioactive Rose Bengal. The scintillation detector was put over the orthotopic transplanted liver immediately after surgery. Body surface counting curve showed almost normal which was composed of uptake, equilibrium and excretion curve, whilst blood disappearance curve

which was measured from femoral artery blood simultaneously, composed of three exponential curves.

From this blood disappearance curve, we calculated intercompartmental rate constant according to three compartment system theory by Araki and Kashima. Results were as follow, intercompartmental rate constant between blood and liver decreased remarkably against controll value. This data was con-