creas, 1/2 (50%) respectively. In our series of 92 cases, 16 cases (17.4%) were diagnosed the occurrence of liver metastases. Three out of 16 cases proved to be false positive during surgery. Of 76 cases who had been classified as normal liver group, 5.3% (4 cases) proved to be false negative. All of the latter patients had many liver metastases in the size of up to 2 cm. The accuracy of preoperative RI-diagnosis of the occurrence of liver metastases became apparent during the operation and/or autopsy. For liver imaging, the gamma camera has many advantages over the liver scanner. However, there is difficulty in interpreting the space occupying lesions in the size of under 2 cm. A calculation of CEA values should be performed as a supplementary test in such occation. All of the four patients who had small liver metastases (false negative cases) showed a sinificantly higher levels of CEA. To know preoperative liver status of patients with gastrointestinal cancer is important.

Actually, preoperative or postoperative liver scintigraphy using scinticamera in patients with gastrointestinal malignancy is becoming more important in the surgical approach to the primary malignant lesion or recurrent malignant tumor. When liver scintigraphy was initially introduced in patients with gastrointestinal cancer, there was considerable merits concerning an efficacy in the surgical treatment.

^{99m}Tc-Sn-Colloid Liver Scanning in the Patients with Diffuse Hepatic Disease

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^{99m}Tc-Sn-colloid liver scanning was performed in 169 patients with diffuse heatic disease diagnosed by liver biopsy. Histological diagnosis were as folows, liver cirrhosis: 21, fatty liver: 21, acute hepatitis: 47, prolonged hepatitis: 12, chronic active hepatitis: 59, chronic inactive hepatitis: 9. As to the size of the liver measured in the scan, 38% of the patients was normal in liver cirrhosis but in the other disorders, as many as 56–70% was normal. Splensmegaly was seen in 38% of the patients with liver cirrhosis, but was seen in only 5–11% of the patients with the other disorders. Increased RI activity of the spleen was seen in 66% of the patients with liver cirrhosis, but was seen in only 11–22% of the patients with the other disorders. Appearance of the bone marrow was more common in the liver cirrhosis than in the other disorders. Not only the liver findings but also the spleen and bone marrow findings were negative in 14% of the patients with liver cirrhosis. On the contrary, as many as 44–52% of the patients with the other disorders were negative about the liver, spleen and bone marrow findings. Within the diffuse hepatic disease except for liver cirrhosis, there was no particular difference in the scan findings.

Computer Differential Diagnosis of Diffuse Liver Disease based on Findings of ^{99m}Tc-Sn Colloid Liver Scintigram

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Using 51 liver scintigrams of diffuse liver disease, which were diagnosed by biopsy, differential diagnosis was tried utilizing BMD program of FACOM 230–38. We made a program with which

the margin of the liver can be delineated automatically in each liver scintigram and 22 parameters can be extracted automatically by computer itself. Using those 22 parameters, differential diagnosis was performed using BMD (Biomedical Computer Program). When all cases are used as the training group, over all accuracy rate of the computer diagnosis is 96%. When about 2/3 cases are used as the training group, residual 1/3 cases are used as the testing group, accuracy rate of testing group is 85%.

This study proved that completely automatic computer differential diagnosis with good results is possible.

Combined Liver-Kidney Scintigraphy in Evaluation for An Inferoposterior Defect on ^{99m}Tc-Colloid Liver Scan

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Combined liver-kidney scintigraphy was performed to evaluate an inferoposterior defect on ^{99m}Tc-colloid liver scan. Liver-kidney image was obtained about one hour after intravenous infection of 2 mCi of ^{99m}Tc-Sn-Colloid and 4 mCi of ^{99m}Tc-DMSA.

In normal case, no separations were found between liver-spleen and kidneys, and therefore such findings were considered to be abnormal.

In present study, twenty-nine cases showed a clear-cut defect at inferoposterior portion on ^{99m}Tc-colloid liver scan. In seventeen cases, that defect was found to be a normal right renal indentation by a combined scintigram finding. However, in remained twelve cases, combined scintigraphy revealed the pathological lesion. Three out of 12 cases were extrarenal lesions, and another nine lesions were renal lesions.

From the present study, the clinical significance of combined liver-kidney scintigraphy was considered to visualize the diret relationship between liver-spleen and kidney, and it could be especially applied to decide the defect at inferoposterior portion whether it was a normal renal indentation or a pathological finding. Moreover whether renal lesions or extrarenal lesions could be decided from the contour of right kidney.

Investigations on Left Lobe Abnormalities of Colloid Liver Scan

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In the interpretation of liver images, knowledge of the anatomy and physiology of the liver and its surrounding structures may often permit definitive diagnosis of abnormality seen. There are some reports about false positive liver image of the right lobe by surroundings, but there are few about the abnormality of the left lobe images. The thin and flexible left lobe is easily compressed and deformed by surroundings.

Retrospective discussion was made on 7 cases in which colloid liver scan showed focal defect in the left lobe. Causes of these defects were proved by other radionuclidic examination, contrast angiography, operation or autopsy.

Case 1: Spleen-scan revealed a large splenic cyst corresponding to the focal defect of the left lobe.

Case II: Accumulation of ^{67}Ga-citrate to the area of focal defect, high level α-Fetoprotein and contrast angiography proved hepatoma.

Case III: Operation proved aplasia of the left lobe, which was difficult to diagnose even by