

## 268

DETECTION OF HEPATIC TUMOR BY MEANS OF SINGLE-PHOTON EMISSION COMPUTED TOMOGRAPHY, US AND XRAY CT  
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We studied the efficacies of the image diagnosis with SPECT, US and XCT in detection and characterizing space occupying lesion (SOL) in the liver. Furthermore the combined diagnosis using three modalities have been analyzed in order to improve the detectability and to specify the nature of the hepatic tumor. Comparison of detectability among each modalities in 102 cases of focal hepatic lesion including 45 cases of HCC, 42 cases of metastatic liver tumor and 94 cases of diffuse hepatic disease was also studied. SPECT imaging recorded 12 false negatives, 10 false positives and 18 equivocal. Two false negatives were seen in a group of patients with intrahepatic malignant lymphoma. There were 7 false negatives and 3 false positives by XCT. In 2 cases of small solid metastasis, however, contrast enhancement tend to obscure the lesion. There were 3 false negatives and 5 false positive by US. In diffuse hepatic diseases, 16% of false positive rate of SPECT was low compared with that of CLS. Moreover, 23 out of 26 equivocal cases with SPECT become true negative by means of US and/or XCT examination. There were not only 3 false positive cases by US but also 2 false positive cases with LC by XCT. Both sensitivity and false positive rate were superior in order of US, XCT and SPECT. On the other hand, false positive rate was high in order of SPECT, XCT, and US. By the diagnosis of combined three modalities, there were 1 false negative and 8 false positives and one of equivocal case. The diagnosis by combined three modalities showed 99.5% of diagnostic rate with 1% of false negative and 8.5% of false positive.

## 270

CLINICAL USEFULNESS OF X-RAY CT AND SCINTIGRAPHY FOR THE DETECTION OF LIVER SPACE-OCCUPYING LESION (SOL) AND CIRRHOSIS: ANALYSIS BASED ON ROC ANALYSIS. K. Nakajima, I. Tatsuno and E. Imabori. Kanazawa Univ., School of Medicine. Kanazawa.

Eighty-five patients who underwent both X-ray CT (XCT) and liver scintigraphy (LS) were studied. XCT was examined before and after contrast enhancement with a slice thickness of 8 mm. LS was routinely examined on four views with Tc-99m Sn colloid. Definitive diagnosis was made by clinical informations, histopathological study of the liver and other imaging modalities. In 85 patients with or without liver SOL, XCT had a sensitivity of 89%, a specificity of 92% and an accuracy of 91%, while LS had a sensitivity of 83%, a specificity of 91% and an overall accuracy of 88%. ROC curves showed diagnostic superiority of the XCT for the detection of liver SOL. In 19 patients with cirrhosis, XCT had no characteristic findings while LS was supposed to be better for the evaluation of diffuse hepatic disease.

## 269

COMPARISON OF LIVER SCINTIGRAPHY AND CT IN THE DETECTION OF LIVER METASTASIS. Y. Kuwabara, I. Nojiri, Y. Oshiumi, H. Nishitani, Y. Ichiya, M. Wada, H. Shiozaki, K. Matsuura. Dept. of Radiology Faculty of Medicine Kyushu University. Fukuoka.

Detectability of liver scintigraphy and computed tomography for liver metastasis was evaluated in 146 cases. Thirty three were proved to have liver metastases at surgery or autopsy, and 10 have liver metastasis clinically. In the remaining 103 cases, 99 did not have liver metastasis at surgery or autopsy, and 4 were thought not to have liver metastasis clinically.

The sensitivity for liver metastasis was 79.0% (34/43) in scintigraphy, and 86.0% (37/43) in CT. The specificity of scintigraphy was 86.4% (89/103), while that of computed tomography was 94.2% (99/103). Small lesions less than 2cm in diameter were main causes for false negative studies in both scintigraphy and CT.

False positive studies were observed in 14 scintigraphies and 4 CT, including seven cysts on liver scintigraphies and two cysts on CT.

In 45 of 146 cases, single photon emission computed tomography was added to the conventional scintigraphy, in which cases the sensitivity of liver scintigraphy (18/20) was equal to that of CT (18/20), but the specificity of CT (24/25) was superior to that of scintigraphy (19/25).

It is concluded that CT is more suitable than liver scintigraphy for detection of liver metastasis.

## 271

CLINICAL EVALUATION OF SPECT IN DETECTION OF LIVER MASSES. S. Jinnouchi, H. Hoshi, K. Watanabe, T. Kodama, H. Honda, S. Nakayama. Department of Radiology, Miyazaki Medical College, Miyazaki

The usefulness of SPECT in detection of liver masses was evaluated prospectively. The materials consisted of 30 patients with liver masses (12 metastases, 11 hepatoma, 4 cysts, 2 cholangiocarcinoma and 1 abscess) and 33 patients without liver masses (13 diffuse liver disease and 20 normal liver). SPECT was performed using GE MaxiCamera with Gamma 11 computer system following conventional liver scan (4 views) with Tc-99m phytate. The results was evaluated by ROC analysis. The detectability of intrahepatic mass over than 5cm in diameter was same in the both technique, but SPECT (transverse, coronal and sagittal images) improved the detectability of the masses smaller than 5cm in diameter. By adding SPECT, the positive rate of SOL smaller than 5cm increased from 57% to 70%. SPECT was useful in the detection of the mass which existed near the porta hepatis and deep seated smaller mass of 2-5cm in diameter.