A Experimental Study of Liver Scintiscanning

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Ability of detecting space occupying lesions on liver scan was experimentally investigated using three nuclides-^{198}Au, ^{131}I, and ^{99m}Tc.

Experimental materials and method:

1: Liver phantom was placed in a body phantom in prone position which is 20cm thick and filled with water.

2: Tumor models of 1.5 cm. to 5 cm. in diameter were placed in the right and left lobes of the liver phantom.

3: Instrument is Shimazu-Multiscintiscanner.

4: 300 μCi or 600 μCi of ^{198}Au and ^{131}I was poured into the liver Phantom and ^{99m}Tc was used in a dose of 3mCi. or 6mCi.

5: 5cm. and 10cm. focusing collimetor were used.

Result:

1: Collimetor
Satisfactory resolutions were obtained with 5 cm. focusing collimator using ^{198}Au and ^{131}I and with 10 cm. focusing collimator using ^{99m}Tc.

2: Detectable diameter or tumor models
Tumor models more than 4 cm. in diameter located at the midportion of the right lobe were detectable in every nuclides and collimators. Tumor 3 cm. in diameter could be detected in some cases using both ^{198}Au and ^{131}I, but ^{99m}Tc always gave good visualisation. Tumor 2 cm. in diameter was visualized only with ^{99m}Tc under the good conditions of the scanner.
We obtained a exellent visualization of tumor models in the liver using ^{99m}TC. When tumor models were located both at the right and left lobes and conditions were set to the right lobe, no tumor in the left lobe could be detected because of low gamma energy in the left lobe.

Conculusion:

^{198}Au or ^{131}I are more suitable for routine studies of liver scintilation scanning and ^{99m}Tc should be used for further evaluation.

Hepatoscintigram on the Tumor of Biliary Tract

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Occationally clinical diagnosis on the tumor of biliary system is very difficult. Especially the detection of the involvement of any portions of biliary tree is more difficult. The purpose of this study is the application of hepatoscintigram for detecting the tumor of the biliary tree. We reviewed 30 cases of the carcinoma of the biliary tree, which were confirmed operatively. The incidence of involvement of the biliary system is as follows; 4 of left intrahepatic biliary duct; 4 of right intrahepatic biliary duct; 7 of gallbladder; 5 of distal common bile duct; 10 of ampulla of Vater.

The tumor of biliary system are divided into 4 patterns, according to the scintigraphic changes in character as scanned hepatic form, the position of scanned defects and the dot density in the hepatoscintigram due to the uptake.

(1) central thin uptake type (2) central-defect type (3) right or left defect type (4) right lower edge defect type.

The correlations between the localization in various tumors of biliary system and these