Differential Diagnosis of the Hepatic Tumor Rapid Sequential Scintigraphy ^{99m}Tc-Colloid and $^{113m}InCl_3$

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Liver scintigraphy has become a well-established procedure. The conventional liver scintigraphy can detect the intrahepatic space occupying lesions which are over 2 cm in diameter, but can not derermine the nature of the space occupying lesions.

It has been well known that selective celiac angiography demonstrates the remarkable tumor stains and tumor vesseles in a certain kind of primary liver tumor (hepatoma and hemoangioma). This vascular and non-vascular space occupying lesions will be able to be defferentiated by assessing the concentration of the injected radioactive material using the rapid sequential scintigraphy. We have studied the possibility of differential diagnosis of the liver tumor by this technique.

Method.

Scintillation camera (Nuclear Chicago Pho/Gamma III) and scintiscanner (Shimadzu SCC-150 S) were used in this study. Radid sequential liver images were obtained by the time lapse camera (Nikon) containing of 35 mm Tri-X films at the intervals of 2 seconds for first one minute after the intravenous injection of 3 mCi of ^{99m}Tc-colloid and at the intervals of 30 seconds for following 4 minutes. After this examination, the conventional liver scanning was performed. And when the localized low activity area in the liver were shown on scintigrams, the blood pool scintigraphy with 3 mCi of $^{113m}InCl_3$ was performed in the same fashion described above.

Results.

1. Vascular lesion such as hepatoma showed the high activity area in the time from 14 to 20 seconds after the injection, which turned to the low activity area within 2 min. On the other hands, non-vascular lesion such as metastases of the liver was found not to have these characteristics.

These findings were supported by following blood pool scintigraphy with $^{133m}InCl_3$.

2. The large hepatoma has necrotic tissues in the central portion. Because the necrotic portion is non-vascular, the transitional high activity area was not observed on the rapid sequential images.

But the high activity area surrounding necrotic tissue was better shown by the blood pool scanning in the outside central necrotic tissue.

3. The images taken by the time lapse camera were too small to evaluate in detail the radioactivity of the upper abdominal organs. Because of its poor resolution, this procedure was only meaningful when the lesion was large enough to be clearly characterized. But computor processing technique may overcome the disadvantage.

4. Our study revealed that the rapid sequential scinti-photography was of value in the differential diagnosis of the liver space occupying lesion.