The Role of Hepatoscintigraphy, Related to Hepatic Angiography and Computed Tomography

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Summary:

In the diagnosis of primary liver cancer, the role of hepatoscintigraphy, its relationship to hepatic angiography, and the significance of angioscannography and angioscintiphotography were subjected to study.

Entering the age of computed tomography (CT), the contribution of CT to the diagnosis of liver diseases was supplemented and the position of nuclear medicine hereafter was also discussed.

Using the ^{99m}Tc sulphur or tin colloid, or ^{99m}Tc phytate in the dose of 3 to 5 mCi, the scintigraphy can be taken in the short time during the breath holding.

Multidirectional projections of hepatic scintigraphy were very useful, such as postero-anterior, right anterior oblique, left anterior oblique, both lateral, antero-posterior and axial view. The lesion in the inner part of right lobe could be detected only with the axial view.

In the large lesion of hepatoma on the right lobe, the compensatory hypertrophy of left lobe is observed in most of the cases. But it is not always true with the cases of severe liver cirrhosis and it is also speculated to have no compensatory hypertrophy with the lesion in the right lobe, of which size is smaller than the whole left lobe.

The hepatoscintigraphy shows the functioning liver and the lesion close to the normal contour of the liver is apt to be missed, if it is not confirmed by other methods such as angiography. This is also true that other part surrounding the small right lobe could be easily interpreted as the filling defect, unless the border of the liver was pointed out.

Use of the radioistopes with the higher energy than ^{99m}Tc will help the detection of the lesion overlapping with residual normal functioning liver, if any.

On the other hand, the hepatic angiography has also the disadvantage to display the lesion or normal hepatogram in the part overlapping with the spines. In such case, hepatoscintigraphy may contribute to identify the remaining normal functioning liver regardless of the overlapping with the spines.

Therefore, the hepatoscintigraphy and the hepatic angiography may help each other interdependently on the occasion that more accurate interpretation is needed.

Angioscannography can be performed by injecting MAA through the angiographic catheter and by scanning the coverage of the distribution of radioisotope injected. Thus, the positive delineation of the hepatic tumor can be obtained. The injection of nor-adrenalin prior to the MAA accentuated the higher MAA distribution on the tumor due to the difference between the normal and tumor vasculature.

The hemodynamics in the region of interest could be studied with rapid serial angioscintiphotography, which is taken as a series of scintiphotograph after intra-arterial injection of ^{99m}Tc-pertechnetate. The activity on the tumor is higher and longer retained than the normal background. This is also accentuated by nor-adrenalin.

The accuracy of short time CT scans in the imaging of liver tumor was demonstrated. In the nuclear medicine, however, the recognition of the functioning imaging should be emphasized by promoting the emission CT instead of static X-ray CT imaging ,and what is more, the 3 dimensional, in the future.

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