

Symposium

Contribution of Nuclear Medicine to the Diagnosis

S-1 On Diagnosis of Liver Tumor

Radioisotopic Diagnosis of Hepatic Tumor

N. TONAMI

Department of Nuclear Medicine, School of Medicine, Kanazawa University, Kanazawa

In order to diagnose the presence of hepatic tumor there are four nuclear medicine diagnostic indicators: one direct demonstration by focal defects on hepatic scintigraphy and three indirect demonstrations by hepatomegaly on hepatic scintigraphy, positive alpha fetoprotein (AFP) value and positive carcinoembryonic antigen (CEA) value.

It is to be desired that hepatic scintigraphy is performed with a combination of ^{99m}Tc colloid and a scintillation camera. Multiple views are essential for adequate examination. As a minimum, anterior, posterior, and right lateral views should be obtained. A 2-cm lesion can be detectable with a new high-resolution camera even if seated deeply in the right lobe.

Hepatic scintigraphy identified 88% of patients having hepatoma and 75% of patients with metastatic hepatic tumor in our study. However it can give us limited information when attempting to localize smaller space-occupying lesions in the liver.

In addition to scintigraphy AFP and CEA measurements are very helpful to detect hepatoma and metastatic hepatic tumor. Diagnostic accuracy of AFP method and hepatic scintigraphy in detecting hepatoma was 96% in 56 cases which included 4 cases with no focal defect on scintigraphy when 200ng/ml was taken as the upper limit of normal AFP value.

On the other hand, if 5ng/ml (sandwich method) is taken as the upper limit of normal CEA value, 13 of 74 cases with metastatic hepatic tumor were picked up as positive. These 13 cases did not show

any focal defects on scintigraphy. However 8 of these 13 cases showed hepatomegaly on scintigraphy.

When positive CEA and hepatomegaly findings are obtained, metastatic tumor should be considered. It is necessary to differentiate the focal defect demonstrated on hepatic scintigraphy because of many cases of focal defects.

Most difficult is to differentiate the true focal defect from the physiological indentation or extrinsic defect due to such as hepatic vein, porta hepatis, kidney indentation, liver notch, gall bladder fossa, rib indentation etc.

In some cases ^{131}I -BSP or ^{131}I -rosebengal scintigraphy, or liver-kidney combined scintigraphy is helpful. There are several nuclear medicine methods to be utilized for the differential diagnosis of intra hepatic tumor: hepatic RI angiography, hepatic blood pool scintigraphy, ^{75}Se -selenomethionine, ^{67}Ga -citrate, ^{169}Yb -citrate scintigraphy, AFP and CEA measurement. In our results of hepatic RI angiography, 31 of 41 patients with hepatoma showed hypervascular, while 8 of 40 patients with metastatic hepatic tumor. ^{75}Se -selenomethionine concentrated on the lesion in 27 of 37 patients with hepatoma, while in 5 of 27 patients with metastatic hepatic tumor. ^{75}Se -selenomethionine is relatively specific to hepatoma.

Since all of these methods are not complete, it is important to combine these effectively for the differential diagnosis of hepatic tumor.