

Carcinoembryonic Antigen Radioimmunoassay and Liver Scintigraphy in Metastatic Liver Cancer

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Carcinoembryonic Antigen (CEA) radioimmunoassay with sandwich method was performed in addition to liver scintigraphy to elevate the diagnostic accuracy for the detection of the metastatic liver cancer from the digestive tract.

In metastatic liver cancer, fifty-five out of 74 patients (75%) showed a strongly positive CEA titer over 5 ng/ml taken as the lower limit predicting the metastatic lesion in the liver. Over-all diagnostic accuracy for the detection of the metastatic liver cancer which showed either well-defined focal defects on liver scintigram or a strongly positive CEA titer was 91%.

On the other hand in the strongly positive CEA cases which showed no clear-cut defects, the absence of metastatic lesion could not be entirely

neglected. However, in nine out of 10 patients which had hepatomegaly the presence of liver metastases was confirmed. Moreover in four of 5 patients which showed both normal liver size and elevated alkaline phosphatase had also metastatic lesions in the liver.

From the present study, it was demonstrated that the diagnostic accuracy for the detection of the metastatic liver cancer could be elevated, and in the cases with the strongly positive CEA titer, but with no clear-cut focal defects on liver scintigram either the finding of hepatomegaly or the result of elevated alkaline phosphatase could highly suggest the presence of the metastatic lesions in the liver.

Measurement of Arterio-Venous Shunt on Liver Tumor

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Measurement of intrahepatic A-V shunt with ^{99m}Tc -MAA was performed on 6 patients with liver tumor and 5 patients with liver cirrhosis. ^{99m}Tc -MAA was slowly injected via hepatic propria artery by superselective Seldinger method. Within one hour after the injection of ^{99m}Tc -MAA, counting over the chest and abdomen was performed employing a whole body scanner. Data was calculated using a digital computer.

Shunting was calculated as follow:

$$\% \text{shunting} = \frac{(L(1) + L(2))}{(L(1) + L(2) + H)} \times 100$$

where

$L(1)$ = counting in R-lung area—background,

$L(2)$ = counting in L-lung area—background,

H = counting in hepatic area—background.

The following result were obtained. In 6 cases of hepatoma, the shunt values were significantly increased by about 5 to 40%, the mean shunt on hepatoma being 19%. Three cases had lung metastases and 2 metastatic cases had high shunt values over 30%. In 5 cases of liver cirrhosis, the shunt values were 2 to 8%, the mean shunting being 5%. In 3 hepatoma cases who had significantly high shunt values, Arterio-Venous shunt, Portal regurgitation and Arterio-Portal shunt were found by selective angiography. With the result of this study, measurement of intrahepatic tumor shunt is very useful in the study of abnormal hemodynamics and metastasis in liver tumor.