contained alpha-fetoprotein over 320 nanograms per ml., while in patients having serum alpha-fetoprotein less than 320 nanograms per ml., only 9% of patients showed definite cold carea.

Australia antigen was appeared in about 50% of either cirrhosis or hepatoma patients assayed with solid phase radioimmuno-method.

A case, diagnosis was made by alpha-fetoprotein assay, hepatic scintigram, and selective angiography, and the hepatoma node with 3 cm. diameter was succesfully resected, was reported.

An Application of Radioimmunoassay of α-Fetoprotein to the Liver Scintigraphic Study

Y. Sakamoto, K. Kiyono, T. Kasuga, F. Nakanishi T. Watanabe, T. Ohata, I. Izuno, T. Wako and Y. Imai

Department of Radiology, Shinshu University, Matsumoto

To detect primary hepatoma, the radioimmunoassay (RIA) of α-fetoprotein (AFP) was used combined with liver scintigraphy and laboratory liver function tests. For this study α-feto-125 kits (supplied by DAINABOT) were used, and the values above 20 ng/ml were evaluated as positive.

Among the sera of 8 hepatoma patients with accurate diagnosis, 6 were positive. One out of 2 negative cases was cholangioma. In 5 out of 6 positive cases, the tumors were found in the upper right quadrant of the liver. AFP could be detected in the sera of 3 out of 12 liver cirrhosis patients (90–2,000 ng/ml).

Small hepatoma under 2 cm in diameter is difficult to detect by liver scintigraphy, and even though such a size of hepatoma is able to detect by the liver angiography, it is often difficult to distinguish hepatoma from hemangioma. Therefore the authors have to say, that there is a limit to the detection of hepatoma by radiological study, and RIA of AFP is expectable to apply.

When AFP in serum is evaluated as positive, hepatoma exists in high probability, then liver angiography should be indicated for these positive patients.

Even though AFP is negative, still there is a possibility of hepatoma. Many cases of hepatoma showed the typical patterns of liver cirrhosis. Therefore it is necessary to check up liver cirrhosis, particularly in the case of suspected hepatoma, by data processing with likelihood method from the imformations of liver scintigraphy, laboratory liver function tests and other clinical findings. Then these suspected cases of liver cirrhosis should be indicated to liver angiography. From these data, primary hepatoma may be diagnosed systematically.

The Relationship with α-Fetoprotein, Hepatic Scintigram and Liver Function

S. Mimoto and T. Masuoka

Nippon Kokan Hospital, Kawasaki

Method Hepatic scintigram were studied with ^{198}Au and ^{67}Ga.

Radioimmunoassay of α-fetoprotein were employed two antibodies method of Abbott Co. And also single radial diffusion method were performed.

Material: Patients with disease of the liver and bilary system were studied. As the control patients with miscellaneous disease having over 20% of γ-globulin in protein fraction. In this study 1259 cases were studied in total.

Result: The normal range of α-fetoprotein by radioimmunoassay in our laboratory was less than 20 mμg/ml.

2. High level of α-fetoprotein were found in primary carcinoma of the liver, metastatic carcinoma of the liver carcinoma of the choledocus, cirrhosis of the liver, chronic hepatitis and acute hepatitis.

3. In all cases of primary carcinoma of the liver α-fetoprotein of radioimmunoassay revealed over 300 mμg/ml.

4. There is no correlation between size of cold area of the liver on the liver scintigram and value of α-fetoprotein in patient with primary liver carcinoma.

5. Relationship with value of liver function test and α-fetoprotein was not recognized.

Liver Scintigraphy with ^{131}I-MIAA

I. Tatsuno and S. Kato

Department of Radiology, National Kanazawa Hospital, Kanazawa

^{198}Au colloid was used for conventional liver scintigraphy on account of cheapness and saving trouble of milking and preparation in short-lived nuclides, in spite of high radiation dose for the liver.

Against above, Micro-aggregated Albumin ^{131}I (^{131}I-MIAA) is an efficient scintigraphic compound for liver, because it is 1–3 micron uniform particle size and it can be metabolized in the reticuloendothelial system.

We have presented the studies of liver scintigraphy with ^{131}I-MIAA and have compared ^{131}I-MIAA with ^{198}Au colloid on the radiation dose of liver and RI distribution (spleen/liver).

Each patient received intravenously 200 μCi ^{131}I-MIAA. Half time disappearance from blood was one and half minutes. The hepatogram reached maximum at 7 minutes. Effective half life in the liver was 2.5 hours after injection. Thus, scintigraphies were usually performed 10 to 60 minutes after injection.

The radiation dose to the liver was calculated based on the Quimby formula. The radiation to 1,200 g of liver (which is average weight of Japanese male) from 200 μCi of ^{131}I-MIAA will be approximately 0.23 rad. The dose was reduced to 1/40 compared with one using 180 μCi of colloidal ^{198}Au.

^{131}I-MIAA was accumulated in the spleen more than ^{198}Au colloid. RI distribution ratio (spleen/liver) of ^{131}I-MIAA in chronic hepatitis, liver cirrhosis and Banti's syndrome showed less overlap and broader range of each diseases compared with ^{198}Au colloid.

Therefore, ^{131}I-MIAA was concluded to be a useful radiopharmaceutical for the liver scintigraphy.