

## **Diagnosis of primary hepatocellular carcinoma by means of the estimation of $\alpha$ -fetoprotein and computerscintigraphy**

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The serum concentration of  $\alpha$ -fetoprotein in 5 of 20 patients of primary hepatocellular carcinoma showed from 5.0 ng/ml to 240 ng/ml, implying that there was primary liver carcinoma producing very little amounts of  $\alpha$ -fetoprotein. Those were classified into the first or the second type of Edmondson's classification of primary hepatocellular carcinoma. When serum concentration of  $\alpha$ -fetoprotein (S- $\alpha$ F) were measured weekly for up to 6 months in the patients with hepatitis or livercirrhosis, Serum  $\alpha$ -fetoprotein increased at the time of decreasing in serum glutamic pyruvic transaminase (SGPT) in 5 of all 19 cases with liverdiseases; 3 cases with fluminant hepatitis, 2 cases with subacute hepatitis, 5 cases with chronic c hepatitis, 5 cases with chronic hepatitis with sublobular hepatic necrosis and 2 cases with livercirrhosis A'. Serially determination of S- $\alpha$ F of those cases were classified into 5 types. When levels of serum concentration of Australia antibody were increased promptly in clinical course in a case with chronic hepatitis (active form), the dane particles (42 nm. in diameter) of Au-antigen appeared in the serum of the patient at the time of transiently elevated in SGPT under electolomicroscopy.

After few weeks, values of SGPT were transiently elevated in accompanly with beeing decreased the values of Au-antigen. Then the Auantigen-antibody complexes were recognized electolonmicroscopically in his serum. Half month later, S- $\alpha$ F increased at the time when levels of SGPT decreased, and the small particles of Au-antigen (20 nm. in diameter) reappeared in the serum.

The dane particles (42 nm. in diameter) of Au-antigen made hepatocellular necrosis, thereafter regeneration of the liver came in accompanied with production of  $\alpha$ -fetoprotein.

Twenty of 32 cases of patients with hepatocellular carcinoma were diagnosed by liverscintiphotography with  $^{198}\text{Au}$ colloid or  $^{99\text{m}}\text{Tc}$ sulfer colloid, but one of 2 cases who were not diagnosed by scintiphotography, was able to make diagnosis of hepatocellular carcinoma by means of serially detumination of S- $\alpha$ F.

Another case was able to confirm by means of subtraction scintigram with computer scintigraphy. A rate of correst diagnosis of liver cancer raised by serially determination of S- $\alpha$ F and hepaticscintiphotography calculated with a computer, simultaneously.

## **A Modified Double Antibody Procedure for Radioimmunoassay of $\alpha$ -fetoprotein**

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A modified double antibody procedure for radioimmunoassay of  $\alpha$ -fetoprotein was applied to clinical investigation.

In original method both 1st and 2nd immunoreactions needed 24 hours for incubation.

By shortening of the incubation time from 24 to 10 hours, the percentages of binding bodies produced in both reactions were increased.

Investigations under the modified conditions as follows—the 1st reaction time was 24 hours at