Quantitative determination of α-fetoprotein by radioimmunoassay in hepatic and other diseases

H. Uehara, H. Nanba, Y. Wakayama, T. Sakurami,
T. Tsunematsu and M. Fukase
Department of Medicine, Second Division of Internal Medicine, Kyoto University, Kyoto

We did radioimmunoassay of α-fetoprotein by salting-out method, in which sodium sulfate was used to precipitate the bound moiety. Following a method reported by Nishi et al., purification of α-fetoprotein was performed by DEAE and CM cellulose chromatography on serum of a patient with hepatoma.

In antigen solution obtained by this method, there was a trace amount of a normal serum constituent on immunoelectrophoresis analysis. Concentration of α-fetoprotein in the solution was measured immunologically utilizing single radial immunodiffusion method, and used it as antigen in radioimmunoassay.

Antiserum was prepared by immunizing rabbits with ascites from a patient with hepatoma, and after absorbing it with pooled normal sera, anti-α-fetoprotein antiserum was obtained which showed monospecificity for α-fetoprotein on immunoelectrophoresis.

Labelling of the antigen with ^{125}I was done by a method of Greenwood et al. Separation of antibody-bound from free labelled antigen was performed by salting-out method, as mentioned above.

Sensitivity of the measure was about 20 mμg/ml, and α-fetoprotein concentration of normal sera was below the sensitivity. Therefore, it was considered that the antiserum was specific for α-fetoprotein in a level of radioimmunoassay as well.

In hepatoma, there were many cases in which serum α-fetoprotein levels were so high that these could be detected even by Ouchterlong method. In some cases, α-fetoprotein was demonstrated only by the radioimmunoassay. In the remaining cases, its levels were below the sensitivity.

In each one case of cholangioma, metastatic liver carcinoma, stomach cancer and pancreas carcinoma, α-fetoprotein was not detected.

In liver cirrhosis, it was detected in 7 of 13 cases, showing 270 mμg/ml as a maximal level. In hepatitis, it was detected in 3 of 27 patients, and a maximal level was 175 mμg/ml. It was also detected in two pregnant women in the third trimester. In the healthy or non-hepatopathic patients, it was detected in one of 27 cases, whose disease was unknown.

Measurement of serum digoxin concentration by radioimmunoassay

M. Inada, Y. Shirahama, M. Kinoshita, S. Sasayama,
H. Kim and R. Kusukawa
Department of Internal Medicine, Tenri Hospital, Tenri

The digoxin radioimmunoassay kit has been recently developed by Daiichi Radioisitope Laboratories. The assay procedure consisted of the following steps: (a) Incubation of the mixture of standard sample or serum, anti-digoxin serum and ^{3}H-digoxin. (b) Separation of bound from free ^{3}H-digoxin by dextran coated charcoal.

The equilibration between ^{3}H-digoxin and an-