Investigation of Production by Experimental Hepatoma of AFP

Sachio OTSUKA

1st Department of Internal Medicine, School of Medicine Toho University., Omori, Tokyo

(Object) Rats were fed on a diet containing 3'Me-DAB and the production of AFP was investigated to see its relation to the experimental cancerization of the liver.

(Methos) 3'Me-DAB was given to Donryu strain male rats for 32 weeks and changes in the finestructure of the liver were observed simultaneously with the changes in the blood level of AFP. AFP in hepatic cells was also examined by immune antibody staining.

(Result) The blood level of AFP was 28.4 $\pm$ 16.2 ng/ml in normal rats. In the course of carcinogenesis, the blood level of AFP rose at first, reaching a peak of 6.2 x 10^4 ng/ml in the 5–6th week (transient high-level peroid) and then lowered to minimum of 0.8 x 10^3 ng/ml observed in the 8th week. It began to rise again from the 9th week and reached 1.1 x 10^5 ng/ml in the 12th week. This high-level period continued for 32 weeks (continuous high-level period). Changes in the finestructure of the liver in the course of carcinogenesis were the appearance of cells derived from the bile duct and transitional epithelium including hyperplasia of SER in a period from the 2nd to the 6th week; the unification of SER, and enclosure of mitochondria by RER in hepatic cells in the 7th week; the dilatation of the inner cavity of RER, and a disappering tendency of ribosomes from RER in the 11th week; the resemblance of hepatic cells to hepatoma cells showing giantic mitochondria, irregularly enlarged RER, disappearance of ribosomes from RER, and a decrease in the number of free ribosomes in the 14th week; and the coexistence of differentiated and undifferentiated hepatoma cells and cholangioma cells in the 19th week. Regarding the loacalization of AFP by immune antibody staining, it was observed in the from of polyribosome on the RER of scarcely differentiated hepatoma cells in which organelles were sparsely eistributed. The same localization of AFP was also observed in precancrous hepatic cells and in some hepatic cells in the 6th week.

(Conclusion) The behavior of REA which appears in hepatic cells at the time of degeneration has an important meaning as to the production of AFP and the production has an intimate relation to the cancerization of the liver.