CLINICAL EVALUATION OF α-FETOPROTEIN FOR DETECTION OF HEPATOCELLULAR CARCINOMA

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For the detection of liver tumors, we have been measuring radioimmunoassay of α-fetoprotein. We found 158 cases of hepatocellular carcinoma during the last five years. 32 cases among them developed hepatocellular carcinoma during the follow-up observation for chronic hepatitis or liver cirrhosis. On the basis of our experience, I would like discuss the possibility of the early detection of hepatocellular carcinoma in its course.

The α-fetoprotein test yielding values higher than 400ng/ml was considered positive. As the result, hepatocellular carcinoma was diagnosed in 66% of cases. This percentage means that the α-fetoprotein test is valuable only 2 out of 3 cases of hepatocellular carcinoma. But radiocolloid liver scintigraphy made the diagnosis in 96% of 158 cases.

The α-fetoprotein value was elevated to above 400 ng/ml in 138 of 1564 cases of various liver diseases were examined by this technique during the last five years. Among these 138 cases hepatocellular carcinoma was found in 75%, as chronic hepatitis in 7%, liver cirrhosis in 11%, metastatic liver carcinoma in 7% and fulminant hepatitis in 1%. The results concluded that this technique was not satisfactory for the detection of hepatocellular carcinoma.

Generally speaking, elevation in α-fetoprotein values above 400ng/ml accompanying chronic hepatitis and liver cirrhosis was transient in most cases. α-fetoprotein as well as transaminase is used to decrease to normal levels one to four weeks later in most cases. However, we experienced three cases of liver cirrhosis in which α-fetoprotein remained high for half a year or more. One of them was accompanied by the development of hepatocellular carcinoma, which was diagnosed in the 3-year follow-up period.

Serial change of α-fetoprotein before and after the diagnosis of hepatocellular carcinoma was studied in 23 cases that had been examined by the technique frequently during the one to two years preceding the diagnosis. We noted that there were mainly four patterns of variation as shown in the next.

1) As the first pattern, though tumor mass was small, α-fetoprotein became higher at the time of diagnosis as compared with the levels obtained one year or more earlier. This pattern was seen in 13 of 23 cases(57%).

2) As the second pattern, though a clear defect was presented on the radiocolloid liver scintigram, the α-fetoprotein value was still low. But, after a while, when tumors grew up to a certain size, the α-fetoprotien turned into positive. This second pattern was seen in 3 of 23 cases(13%).

3) As the third pattern, α-fetoprotein value did not show wide variations, and lingered between 20ng /ml and 400ng/ml. Four out of 23 cases had this pattern(17%).

4) As the fourth pattern, α-fetoprotein remained on the levels less than 20ng/ml throughout the course. 3 out of 23 cases belong in this(13%).

In the next place, another attempt was made to relate α-fetoprotein values and the growth of hepatocellular carcinoma in 30 cases which had been followed by radiocolloid liver scintigraphy for 4 months or more after diagnosis. The growth of carcinoma was more rapid in 20 cases having α-fetoprotein values exceeding 103ng/ml as compared with the cases having α-fetoprotein values less than 400ng/ml. The one year survival rate was only 14% in 20 cases.

In contrast to this, α-fetoprotein value was always low, less than 400ng/ml. The growth of the tumor was also very limited. The one-year survival rate was 38% in 10 cases having α-fetoprotein values lower than 400ng/ml.

We found 32 early cases among 158 hepatocellular carcinoma. In our study, the early stage is defined as follows; on the radiocolloid liver scintigram, only one solitary defect was found, and the tumor involves less than a quarter in the right lobe or its location is limited only to the left lateral segment only. Of the 32 cases, 15 were detected by a combination of radiocolloid liver scintigraphy and α-fetoprotein assay, 13 cases were detected by radiocolloid scintigraphy alone, and 4 cases detected by α-fetoprotein assay alone.

Cancer nodules were surgically resectable in 8 of the 32 cases of early hepatocellular carcinoma.

CONCLUSION

The best way to improve the cure rates of hepatocellular carcinoma at present time is to detect and resect cancer nodules earlier in their course. With the results of our clinical study, I would like to emphasise that it is necessary to apply the combination technique with non-invasive procedures, such as scintigraphy and -fetoprotein.