Serum β_2 -Microglobulin in Chronic Liver Diseases

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NAKAMURA, S., TAKEZAWA, Y. and MAEDA, T. *Serum β_2 -Microglobulin in Chronic Liver Diseases*. Tohoku J. exp. Med., 1981, 134 (2), 221-222 — Serum β_2 -microglobulin was determined in 53 patients with chronic liver diseases. No elevation was shown in fatty liver due to obesity or alcoholism. Serum β_2 -microglobulin was abnormal only in 4% of the patients with chronic hepatitis. Determination of serum β_2 -microglobulin seems not useful for the differential diagnosis between chronic hepatitis and fatty liver due to obesity or alcoholism. Serum β_2 -microglobulin was elevated in 29% of the patients with alcoholic liver cirrhosis, in 41% of those with non-alcoholic liver cirrhosis, and in 75% of those with primary liver carcinoma. The average serum β_2 -microglobulin concentration was significantly higher in non-alcoholic liver cirrhosis than in alcoholic liver cirrhosis. There was a significant correlation between serum β_2 -microglobulin and γ -globulin concentrations in liver cirrhosis. ——— β_2 -microglobulin; fatty liver due to obesity; chronic hepatitis; liver cirrhosis; γ -globulin

Serum β_2 -microglobulin has been hitherto determined mainly in renal diseases and in malignant tumors. Recently Hällgren (1979) reported that serum β_2 -microglobulin was elevated in most patients with chronic (active or persistent) hepatitis or alcoholic liver cirrhosis but was mostly within the normal range in patients with alcoholic fatty liver. As we previously showed (Nakamura et al. 1980), glutamic pyruvic transaminase, glutamic oxalacetic transaminase, and γ -glutamyl transpeptidase are occasionally elevated in obese subjects, and this presents a difficult problem of differentiation from chronic hepatitis. Hence we measured serum β_2 -microglobulin in chronic liver diseases in order to determine its usefulness in the differentiation, especially, between fatty liver due to obesity and chronic hepatitis.

Serum β_2 -microglobulin was measured in 24 controls and in 53 patients with chronic liver diseases in the First Department of Internal Medicine of Tohoku University Hospital and in the referred hospitals by radioimmunoassay using Phadebas β_2 -micro test (Pharmacia AB, Uppsala, Sweden). Patients with elevated serum creatinine concentrations (more than 1.2 mg/100ml) were excluded from the study. Values over mean plus 3 times standard deviations of the controls (2.4 mg/l) were thought to be abnormal. Comparisons of frequency of abnormal values were analyzed with Fischer's direct calculation method of probability, and those of average concentrations with Student's *t*-test.

The results are shown in Fig. 1. No elevation was found in fatty liver due to obesity or alcoholism. In chronic hepatitis, though the average β_2 -microglobulin concentration was significantly higher than the controls ($p < 0.05$), the incidence of abnormal values was only 4%, and was not significantly different from that in the controls or in fatty liver due

Fig. 1. Serum β_2 -microglobulin concentrations in chronic liver diseases. The dotted line indicates the normal upper limit.

to obesity or alcoholism. Determination of serum β_2 -microglobulin seems to be not useful for the differential diagnosis between chronic hepatitis and fatty liver due to obesity or alcoholism. There was no significant difference in the serum β_2 -microglobulin level between 6 cases of chronic hepatitis with more than 200 Karmen units of glutamic pyruvic transaminase and 18 cases with less than 200 Karmen units, or between 4 cases of chronic active hepatitis and 20 cases of chronic persistent hepatitis.

The incidences of elevated values in alcoholic liver cirrhosis, non-alcoholic liver cirrhosis, and primary liver carcinoma were 29%, 41%, and 75%, respectively, and were significantly higher than that in the controls ($p=0.045$, 0.0009, and 0.001, respectively). The average serum β_2 -microglobulin concentration was significantly higher in non-alcoholic cirrhosis (2.37 mg/l) than in alcoholic cirrhosis (1.73 mg/l) ($p<0.05$). There was a statistically significant correlation between serum β_2 -microglobulin and γ -globulin concentrations in liver cirrhosis ($r=0.46$; $p<0.05$). It is interesting for understanding of mechanism of elevation in serum β_2 -microglobulin concentrations in liver diseases that there are a significant difference between alcoholic and non-alcoholic cirrhosis and also a significant correlation between β_2 -microglobulin and γ -globulin concentrations in liver cirrhosis.

References

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