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Lactate dehydrogenase isoenzymes in dimethylnitrosamine- induced hepatic fibrosis in rats

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Abstract

Alteration of liver function is an inevitable phenomenon in hepatic fibrosis. Since many enzymes are useful in diagnosing liver diseases, the alteration of the lactate dehydrogenase (LDH) isoenzyme pattern was studied in experimentally induced liver fibrosis. The liver injury was induced by intraperitoneal injections of dimethylnitrosamine (DMN) into adult male albino rats belonging to the Wistar strain. The injections were given on the first 3 consecutive days of each week over a period of 3 weeks. The degree of hepatic fibrosis was assessed by histopathological examination as well as by monitoring the collagen content of the liver tissue. The LDH isoenzymes in serum and liver were separated by polyacrylamide gel electrophoresis. The percentage distribution of the isoenzymes was determined, and the M/H ratio was calculated. The total LDH activity was also studied in the liver and serum samples. The results demonstrated many pathological changes including centrilobular necrosis and fibrosis after DMN treatment. The collagen content was increased to about 4 times normal by the 21st day of DMN administration. The total LDH activity was significantly increased in the serum on the 14th and 21st days. But in the liver tissue, a significant increase was noticed only on the 7th day. The LDH isoenzyme patterns indicated a sharp increase in the activities of LDH4 and LDH5 in the serum on the 14th and 21st days of DMN treatment. A remarkable increase was noticed in the M/H ratio on the 14th and 21st days in the serum and on all the days in the liver tissue. Increased serum LDH activity suggests deterioration of liver functions during hepatic fibrosis. The present study demonstrated that serum LDH isoenzyme assay is a useful tool in the diagnosis of hepatic fibrosis along with other biochemical tests.

Author Keywords

Dimethylnitrosamine; Hepatic fibrosis; Lactate dehydrogenase; LDH isoenzymes; Liver collagen

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