

CHANGES IN THE ACTIVITY OF SOME SERUM ENZYMES IN PATIENTS WITH EXTRAHEPATIC CHOLESTASIS

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Early distinguishing of the character of jaundice is an unsolved problem yet. One of the first and in the same time very difficult and complicated problems in the common clinical practice is to differentiate cholestasis from other diseases with jaundice especially intrahepatic cholestasis (IHC) from extrahepatic one (EHC). Clinical enzymology continues to develop intensively and efforts are directed towards investigation of enzymes of greatest diagnostic value. Membrane-connected enzymes - γ glutamyltransferase (GGT), alkaline phosphatase (AP), leucinaminopeptidase (LAP) and 5'-nucleotidase known also as cholestatic, excretory, reactive are located predominantly in the membranes near the biliary pole of the hepatocyte surrounding the lumen of the biliary canalicules. There is some activity in the cytosole of the hepatocyte, too (1). The activity of these enzymes increases in all liver diseases but it is especially high in those with cholastasis (3). The activity of serum transaminases is moderately increased (1,2,4,6,7). The activity of these enzymes does not correlate with the degree of liver damage (2,3). Fellin et al. (5) find in cholestasis an increase of GGT activity in 71% and of AP in 25% of the patients. The activity of GGT closely correlates with that of AP and LAP in patients with cholestasis. Our purpose was to evaluate the activity of some serum enzymes in patients with EHC.

Our estimation includes 94 patients with EHC from 32 to 91 years old, mean age of 64, and 45 healthy approximately age-matched controls. In 48 of the patients cholestasis is due to choledocholithiasis and in the other 46 it is due to a malignancy - cancer of the head of the pancreas or bile ducts. The diagnosis is confirmed by clinico-laboratory data as well as on operation or autopsy. Enzyme activity and levels of cholesterol and bilirubin are evaluated by methods routine for the Clinic. The Student's statistical test is used

The highest increase of GGT activity was found in patients with EHC. It was increased in 100% of the patients, respectively, over twice - in 100% of the patients, over five times - in 89% and over ten times - in 26% (table 1). Changes in AP activity are similar but in lower grade. In 90% of the patients it is increased and in 48% this increase is more than twice.

Table 1 - Activity of some serum enzymes and degree of their increase in patients with EHC

Biochemical indices	x ± σ	Patients with EHC n=94			
		Degree of increase in % of patients			
		total	> 2 times	> 5 times	> 10 times
GGT U/I	677 ±337	100	100	89	26
AP U/I	813 ±438	90	48	19	4
ASAT U/I	131 ± 61	66	50	8	3
ALAT U/I	209 ±104	82	68	23	12
Bilirubin mmol/l	150 ±109	100	72	58	31
Cholesterol mmol/l	7 ± 3,2	52	19	0	0

It is curious to note that Fellin et al. (5) find an increase of GGT activity in 71% and of AP - in 25% of the patients with cholestasis. Our results comply with those of many other authors (1,2,4,6,7). There is an increase of the activity of serum transaminases but in a rather lower grade. The ALAT activity is slightly higher than that of ASAT. Enzyme activity is higher in patients with malignant etiology of cholestasis than in those with benign one. There is a correlation between these changes and the higher level of serum bilirubin in malignant cholestasis. A straight correlation is established between the increased level of serum cholesterol and the enzyme activity (the changes are statistically significant for ALAT and GGT), opposite to acute and chronic liver diseases in patients with EHC, the elevation of activity of both GGT and AP is higher and more frequent than that of both ASAT and ALAT one which may be of great diagnostic value.

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