



ASSESSMENT OF LIVER ENZYMES IN PATIENT DIAGNOSTIC WITH H. PYLORI IN KHARTOUM STATE.

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ABSTRACT

Background: H. pylori is a type of germ which attack human gastrointestinal tract mainly stomach and liver leading to gastritis, liver damage and hence elevated liver enzyme. The aim of the study was to estimate the liver enzymes ALT, AST and GGT in Patient with H. pylori **Methodology:** A case control study conducted at Khartoum hospital, Sudan. The study included 50 patient with H. pylori and 50 healthy individuals. Both groups were age and gender matched. The serum enzymes levels were measured using Cobas integra 400. **Results** The mean AST in the patient and control were (18 IU/L $\pm$ 9.9) and (13 IU/L $\pm$ 6.1) respectively. The mean ALT in patient and control in patient were (15 IU/L $\pm$ 8) and (11 IU/L $\pm$ 5.8) respectively. The mean GGT in patient and control were (19 IU/L $\pm$ 5.3) IU/L and control (11 IU/L $\pm$ 4.9) respectively. **Conclusion:** There were significant increases in AST, ALT and GGT levels of patient when compared to the control level p.value were 0.04, 0.012 and 0.000 respectively.

KEYWORDS: Helicobacter pylori, liver disease, liver enzymes.

INTRODUCTION

Helicobacter pylori is helical shape (from which the genus name is derived) previously called Compylobacter pylori. It is a gram-negative, microaerophilic bacterium found usually in the stomach. It was identified in 1982 by Australian scientists Barry Marshall and Robin Warren, who found that it was detected in a person with chronic gastritis and gastric ulcers.^[1] More than 50% of the world's population are infected with H. pylori in their upper gastrointestinal tract.^[2,3] Infection is more prevalent in developing countries, and incidence is decreasing in Western countries.^[2,3] Some studies have suggested that H. pylori infection is a risk factor for chronic diseases of the liver and biliary tract, such as chronic cholecystitis, primary sclerosing cholangitis, primary biliary cirrhosis, and hepatocellular carcinoma.^[4,5,6,7,8,9]

Studies in humans have shown the presence of Helicobacter DNA in hepatic tissue of patients with hepatobiliary diseases, mainly cirrhosis and/or HCC secondary to hepatitis B virus (HBV) and hepatitis C virus (HCV).^[10]

Animal studies have shown that H. Pylori can exist in the liver and gallbladder cells.^[11,12] and can cause mild to moderate multifocal hepatitis and hepatic fibrosis.^[13]

H. pylori play a role in Hepatic encephalopathy (HE) and have a broad spectrum of neurological symptoms varying from minimal hepatic encephalopathy (MHE) to deep coma and death.^[14] Patients with MHE appear clinically well and lack overt encephalopathy; subtle cognitive defects may be present.^[15]

The diagnosis of MHE is difficult and is made on the basis of neuropsychometric tests.^[16] Alanine aminotransferase (ALT), formerly called serum glutamate pyruvate transaminase, or SGPT, is an enzyme necessary for energy production. It is present in a number of tissues, including the liver, heart, and skeletal muscles, but is found in the highest concentration in the liver.^[17]

Aspartate aminotransferase (AST), formerly called serum glutamic-oxaloacetic transaminase, or SGOT, is another enzyme necessary for energy production. It, too, may be elevated in liver and heart disease. In liver disease, the AST increase is usually less than the ALT increase.^[18]

The gamma-glutamyl transpeptidase (GGT) enzymes are molecules that are necessary for chemical reactions in the human body. GGT functions in the body as a transport molecule, helping to move other molecules around the body. It plays a significant role in helping the liver metabolize drugs and other toxins.^[18]

The objective of this study was to determine the level of AST, ALT and GGT in serum of 50 patients with H. pylori compared to 50 healthy individuals.

MATERIALS AND METHODS

Study design: analytical case control study carried out in Khartoum state Sudan.

Sample size

Patients group: 50 patients with H. pylori

Control group: 50 healthy individuals.

Patients with H. pylori (Patients group (Healthy individuals were included and Patient with diseases other than H.pylori that may affect liver enzymes were excluded.

Five milliliters of venous blood were collected into plain container from each participant, allowed to clot and then

centrifuged. Plasma was used for estimation of the enzymes.

Data from questionnaire and laboratory techniques were statistically analyzed using statistical package for social science (SPSS) version 16.

RESULTS

The mean AST in the patient and control were (18 IU/L $\pm$ 9.9) IU/L and (13 IU/L $\pm$ 6.1) respectively.

There was significant increase in AST level of patient when compared to the control level p.value(0.04).

The mean ALT in patient and control in patient were (15 IU/L $\pm$ 8) and (11 IU/L $\pm$ 5.8) respectively .

There was significant increase in ALT Level of the patient to control level p. value (0.012)

The mean GGT in patient and control were (19 IU/L $\pm$ 5.3) and (11 IU/L $\pm$ 4.9) respectively.

There was significant increase in GGT level of patient when compared to the level control level p.value (0.000).

Table.(1) Mean, S D, SE, 95% CIM, Minimum, and Maximum

		N	Mean	S D	SE	95% CIM		Mini	Max
						Lower Bound	Upper Bound		
AST IN U/L	PATIENTS	50	18	9.9	1.4	15	21	8	78
	CONTROL	50	13	6.1	.9	11	15	4	32
	Total	100	16	8.6	.9	14	17	4	78
ALT IN U/L	PATIENTS	50	15	8	1.1	13	17	3	54
	CONTROL	50	11	5.8	.8	10	13	3	27
	Total	100	13	7.2	.7	12	15	3	54
GGT IN U/L	PATIENTS	50	19	5.3	.8	17	20	10	40
	CONTROL	50	11	4.9	.7	9	12	5	27
	Total	100	15	6.5	.6	13	16	5	40

Table (2) Sum of Squares, df, Mean Square, F, Sig. ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
AST IN U/L	Between Groups	590.490	1	590.490	8.671	.004
	Within Groups	6673.700	98	68.099		
	Total	7264.190	99			
ALT IN U/L	Between Groups	327.610	1	327.610	6.597	.012
	Within Groups	4866.500	98	49.658		
	Total	5194.110	99			
GGT IN U/L	Between Groups	1648.360	1	1648.360	62.816	.000
	Within Groups	2571.640	98	26.241		
	Total	4220.000	99			

DISCUSSION

H.pylori infections in the general population and some evidence indicating an association between H.pylori infections with some degree of liver damaged. In this results showed there statically significance increase in the mean of serum (AST,ALT,GGT) level in patients with H.pylori infections compared with control. This suggests a role of H. pylori infection in liver

impairment.^[17] Similar study by Ki et al indicated pro inflammatory signaling pathway as underlying mechanisms of accelerated hepatic fibrosis by infections.^[18] Some studies also showed an association between H.Pylori presences in liver (genetically similar to those isolated from stomach) and disease progression in patient with viral chronic hepatitis and cirrhosis.^[19,20]

CONCLUSION

There were significant increases in AST, ALT and GGT levels of patient when compared to the control level *p* values were 0.04, 0.012 and 0.000 respectively. I recommended that's patients take drugs to prevent complication.

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