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Study Effect of Liver Enzyme in Patient with Myocardial Infraction

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Abstract: The study conducted on too Iraqi patient with chronic atherosclerosis at age rang (29-70years) in Baquba teaching hospital in (center care unit) during the period from 25 September 2020to may 2021. The patients divided in (55 mans and 45 patients) the total patient divided in tow groups according the treatment (30) of total patient under go to treatment for two to three days after atherosclerosis and 70 patient in same day of diagnosis of atherosclerosis .The AST value increase and we can use this as biomarkers with Atherosclerosis.

Introduction

Aspartate Aminotransferase (AST)

Aspartate aminotransferase (AST) is an enzyme belonging to the class of transferases. it commonly referred to as transaminase and is involved in the transfer of an amino group between aspartate and α-keto acids , it is widely distributed in human tissue . the highest concentrations are found in Liver cardiac tissue and skeletal muscle , with smaller amounts found in the kidney , pancreas , and erythrocytes [1]

Aspartate aminotransferase (AST), a liver enzyme, has been viewed as an indicator of hepatic dysfunction and non-alcoholic fatty liver disease (NAFLD)[2]. Despite there is discordance in the link between particular liver enzyme (AST) and CVD, this enzyme has drawn attention as a new risk factor for cardiovascular disease (CVD). Unalp-Arida et al. recently reported that elevated AST and GGT levels are unrelated to all-cause mortality and mortality from CVD, cancer, or diabetes, and GGT is only associated with increased all-cause mortality (hazard ratio [HR], 1.45; 95 percent confidence interval [CI], 1.21–1.74)[3]. Fraser et al. recently reported that elevated AST and GGT levels are unrelated to all-cause mortality and mortality from CVD, cancer, In contrast, Lee et al. discovered that increased ALT and AST levels are linked to CVD and all-cause mortality. These disparities in prior study data show that specific liver enzymes have a varied influence on CVD and death. Moreover, these contradictory findings might be due to a limited sample size, an inadequate follow-up duration, or disparities in age, gender, and ethnicity. An analysis of the connection between liver enzymes, NAFLD, and incident CVD [4] found that AST enzymes, particularly, are related with long-term CVD risk and death irrespective of other recognized CVD risk factors. GGT could be a straightforward and practical technique for assessing individual CVD and mortality risk, as well as a foundation for suitable individual action to avoid CVD and death [5].

Experimental part

Procedure:

All samples and standards should be run in duplicate. Glutamate Standards for Colorimetric Detection Dilute 10 uL of the 0.1 M Glutamate Standard solution with 990 ul of the AST Assay

Buffer to prepare a 1 Mm standard solution. Add 0, 2, 4, 6, 8, and 10 uL of the 1 mM standard solution into a 96 well plate, generating 0 (blank), 2, 4, 6, 8, and 10 nmole/well standards. Add AST Assay Buffer to each well to bring the volume to 50 uL.

Sample Preparation:

Tissue (50 mg) or cells (1 x 109) can be homogenized in 200 uL of ice-cold AST Assay Buffer. Centrifuge the samples at 13,000 x g for 10 minutes to remove insoluble material. Serum samples can be directly added to wells.

Assay Reaction:

1. Set up the Master Reaction Mix according to the scheme in Table 1. 100 uL of the Reaction Mix is required for each reaction (well).

Master Reaction Mix

Reagent	Master Reaction Mix
AST Assay Buffer	80 uL
AST Enzyme Mix	2 uL
AST Developer	8 uL
AST Substrate	10 uL

2. Add 100 uL of the Reaction Mix to each of the wells. Mix well using a horizontal shaker or by pipetting. Protect the plate from light during the incubation
3. Incubate the plate at 37 °C. After 2-3 minutes, take the initial measurement (Tinitial). Measure the absorbance at 450 nm at the initial time (A450) initial-
4. Continue to incubate the plate at 37 °C taking measurements (A450) every 5 minutes. Protect the plate from light during the incubation.
5. Continue taking measurements until the value of the most active sample is greater than the value of the highest standard (10 nmole/well). At this time the most active sample is near or exceeds the end of the linear range of the standard curve.
6. The final measurement [(A450) final] for calculating the enzyme activity would be penultimate reading or the value before the most active sample is near or exceeds the end of the linear range of the standard curve, see step 5. The time of the penultimate reading is Tfinal.

Results

AST level showed increased significant in patients (70.73 ± 12.77) when compared with control (25.81 ± 2.46) p-value <0.05 ,the liver enzyme AST As a consequence, agreed with Kyung Mook Choi. *Et al*., (2018) [6] proposed that AST are risk factors for cardiovascular disease (CVD), but the influence on mortality after myocardial infarction (MI) or ischemic stroke (IS) has not previously been investigated. (1), table (1).

Table (1) serum AST in study groups

Parameters	Group	Mean ± Std.	P-value
AST	Control	25.81 ± 2.46	0.047
	Patients	70.73 ± 12.77	

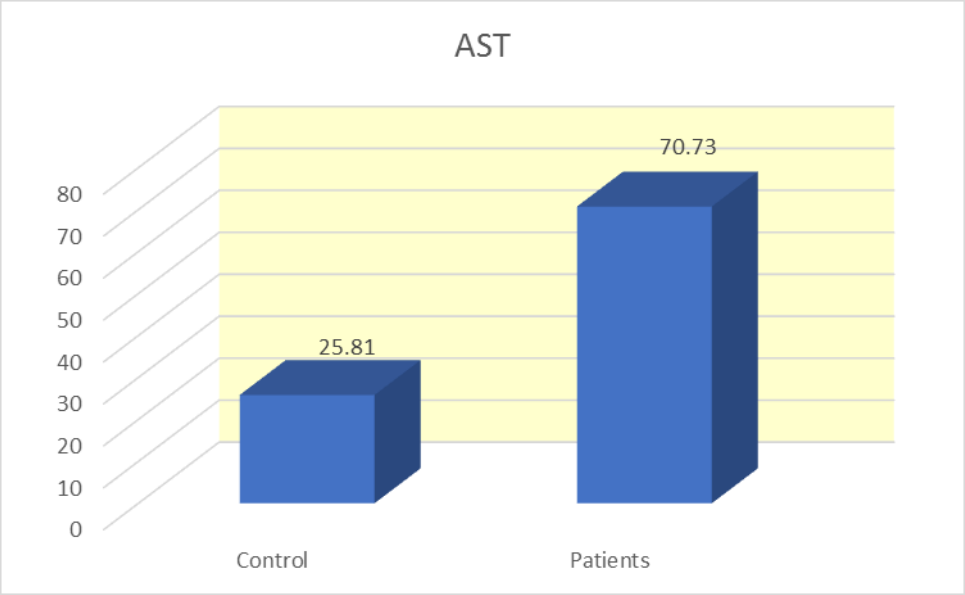

Figure (1) AST level in study groups

References

1. Mason, J. E., Starke, R. D. & Van Kirk, J. E. Gamma-glutamyl transferase: a novel cardiovascular risk biomarker. Prev Cardiol. 13, 36–41 (2010).
2. Unalp-Arida, A. & Ruhl, C. E. Noninvasive fatty liver markers predict liver disease mortality in the U.S. population. Hepatology. 63, 1170–83 (2016).
3. Lee, H. et al. Association Between Change in Serum Aminotransferase and Mortality: A Nationwide Cohort Study in Korea. Medicine (Baltimore). 95, e3158 (2016).
4. Kyung Mook Choi 1, Kyungdo Han2, Sanghyun Park2, Hye Soo Chung1, Nam Hoon Kim1,Hye Jin Yoo1, Ji-A Seo1, Sin Gon Kim1, Nan Hee Kim1, Sei Hyun Baik1, Yong Gyu Park2 &Seon Mee Kim3" Implication of liver enzymes on incident cardiovascular diseases and mortality: A nationwide population-based cohort study" (2018) 8:3764 |DOI:10.1038/s41598-018-19700-8
5. Pepys MB, Hirschfield GM. C-reactive protein: a critical update. J Clin Invest (2003) 111:1805–12. doi:10.1172/JCI18921
6. Kyung Mook Choi 1, Kyungdo Han2, Sanghyun Park2, Hye Soo Chung1, Nam Hoon Kim1,Hye Jin Yoo1, Ji-A Seo1, Sin Gon Kim1, Nan Hee Kim1, Sei Hyun Baik1, Yong Gyu Park2 &Seon Mee Kim3" Implication of liver enzymes on incident cardiovascular diseases and mortality: A nationwide population-based cohort study" (2018) 8:3764 |DOI:10.1038/s41598-018-19700-8