Research Article

Assessment of Activity of Transaminase at Patient who Suffer from Diabetes Type 2

Hamit Ismaili[1], Kemajl Kurteshi[2*], Julijana Tomovska[3], Agron Krasniqi[4], Samir Mulaki[4]
[1]Department of Chemistry, Faculty of Natural Sciences, University of Prishtina, Kosovo.
[2]Department of Biology, Faculty of Natural Sciences, University of Prishtina, Kosovo.
[3]Faculty of Biotechnology, University of Bitola, Macedonia.
[4]Master study, Department of Chemistry, Faculty of Natural Sciences, University of Prishtina, Kosovo.
***Corresponding author's E-mail:** kkurteshi@yahoo.com

Received: 05-10-2017; **Revised:** 12-12-2017; **Accepted:** 26-12-2017.

ABSTRACT

The main objective of this study is to investigate the possibility of impact of diabetes type 2 in acitivity of alanine aminotransferase level (ALT) and aspartate aminotransferase (AST). The blood samples taken from 40 patients who suffer from diabetes milletus type 2, at hospital Drenas.

Keywords: Transaminase, ALT, AST, diabetes.

INTRODUCTION

Diabetes mellitus (DM) is often simply considered as diabetes, a syndrome of disordered metabolism with abnormally high blood glucose levels (hyperglycemia). The two most common forms of DM are Type-1 diabetes and Type-2 diabetes (T2DM) both leading to hyperglycemia, excessive urine production, compensatory thirst, increased fluid intake, blurred vision, unexplained weight loss, lethargy, and changes in energy metabolism [6]. Diabetes mellitus is one of the major non-communicable diseases and the prevalence is rising globally. Type 2 diabetes is the most common form, accounting for 90% of all cases[1]. The prevalence of diabetes worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of diabetes is projected to increase from 171 million in 2000 to 366 million in 2030. Diabetes is more prevalent in men than women [7].

There exists an association between diabetes and liver injury. Liver plays a major role in the regulation of carbohydrate homeostas is. Hepatocellular glycogen accumulation leads to hepatomegaly and liver enzyme abnormalities in poorly controlled diabetes patients.

MATERIALS AND METHODS

A total of 40 patients of both gender suffering from Diabetes Milletus type 2, age 30-60 and sex matched normal individuals were selected for the study. Half of the patients belong to the male gender (20) and half female gender. Blood Sample 5 ml of venous blood was drawn from each volunteer in this study using a disposable plastic syringe. The sample was then analysed for serum alanine aminotransferase (ALT), aspartate aminotransferase (AST), by 550 Expressed Plus Automatic Chemistry Analyzer.

RESULTS AND DISCUSSION

The mean activity of serum ALT (49.65 U/L), serum AST, (51.13 IU/L), of male diabetic patients shows significant difference from that of healthy - normal subjects (Table 1, Figure 1).

At female diabetic patient mean activity of serum ALT (47.8 U/L), serum AST, (48.43 IU/L), also shows significant difference from that of healthy - normal subjects

After separation in the group of young and the elderly, shows significant difference from that of healthy - normal subjects. At old group (male and female) show higher activity compared with young group.

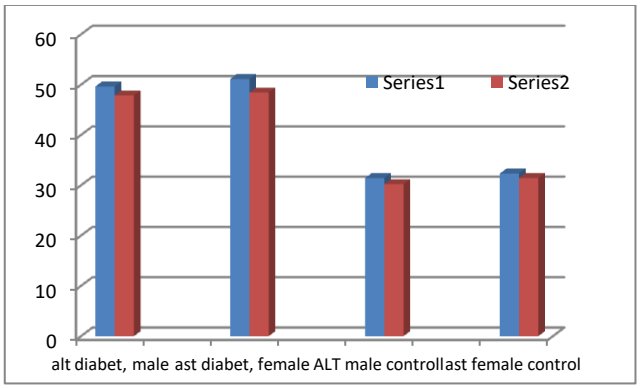

Figure 1: Comparison of serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) activity in diabetic patients and non-diabetic individual from control group.

The mean level of transaminase ALT and AST in Type-2 diabetic patients group was 49 IU/L in normal controls was 30.66 ± 20.81 IU/L. The ALT in fasting serum sample in diabetic patients group was found to be significantly higher in comparison to the normal control group with P = 0.026. Raised level of ALT was noted in 19.8% diabetic patients.

Table 1: Comparison of serum alanine aminotransferase (ALT) and aspartate aminotransferase (AST) activity in diabetic patients and non-diabetic individual from control group.

	Diabetic patient Median Value of ALT/ IU/L,	Diabetic patient Median Value of AST/IU/L,	Control group Median Value of ALT and AST /IU/L,	
			ALT	AST
Male	49.65	51.13	31.43	32.34
female	47.87	48.43	30.22	31.45
Old male	50.12	51.98	30.97	31.97
Young male	45.21	49.56	26.34	30.32
Old female	47.74	48.54	30.27	30.65
Young female	42.65	46.11	29.18	29.46

These findings are consistent with the results obtained from several other studies by various researchers. According to [3], it was identified that the prevalence of ALT enzyme activity in diabetic patients (n = 959) was 15.7% (151).18 ALT catalyzes the reversible transamination between L-alanine and α-ketoglutarate to form pyruvate and L-glutamate as such having an important role in gluconeogenesis and amino acid metabolism.

Elevated serum activity of the two aminotransferases, aspartate aminotransferase (AST) and alanine aminotransferase (ALT), is the most frequently measured indicator of liver disease and occurs in diabetics more frequently than in the general population [2].

CONCLUSION

Based in obtained results we can conclude that the liver enzymes alanine aminotransferase (ALT) level have shown higher activity at patients with Diabetes Milletus than individuals who do not have Diabetes Milletus , from control group.

REFERENCES

1. Amos, A.F., D.J. McCarty, P. Zimmet,. The rising global burden of diabetes and its complications: estimates and projections to the year 2010. Diabetes Med, 14(5), 1997, 81–85.
2. Erbey, J.R. , Silberman, C , E. Lydick,. Prevalence of abnormal serum alanine aminotransferase levels in obese patients and patients with type 2 diabetes. Am. J. Med, 109, 2000, 588–590.
3. Gonem Sh., A. Wall, P. De,. Prevalence of abnormal liver function tests in patients with diabetes mellitus, Endocrine (Abstracts), 13, 2007, 157.
4. Harris, E .H,. Elevated Liver Function Tests in Type 2 Diabetes. Clinical Diabetes , 23 (3), 2005, 115-119
5. Levinthal, G.N, A.S. Tavill,. Liver disease and diabetes mellitus. Clin Diabetes, 17 (2), 1999, 1–20.
6. Mathur Shipra, , D. K. Mehta, S. Kapoor, S. Yadav,. Liver Function in Type-2 Diabetes Mellitus Patients. International Journal of Scientific Study, 2016, 3, 10.
7. Wild, S., G .Roglic, A. Green,R. Sicree, H. King,. Global Prevalence of Diabetes: Estimates for the year 2000 and projections for 2030. Diabetes Care, 27(5), 2004, 1047–1053.

Source of Support: Nil, **Conflict of Interest:** None.