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Original Research Paper

Elevation of Serum Aminotransferases (ALT, AST), Alkaline Phosphatase (ALP), Lactate Dehydrogenase (LDH) And Creatine Phosphokinase (CPK NAC) In Duchenne's Muscular Dystrophy (DMD) Patients

Biochemistry

KEYWORDS : Duchnne's Muscular Dystrophy (DMD), Alanine Aminotransferase (ALT), Aspirate Aminotransferase (AST), Alkaline Phasphatase(ALP), Lactate Dehydrogenase (LDH), Creatine Kinase (CK)

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ABSTRACT

Duchenne's Muscular Dystrophy (DMD) is a severe type of muscular dystrophy (1).The symptom of muscle weakness (2). Typically muscle loss occur first in the upper legs and pelvis followed by those of the arms. This can result in trouble in standing up (1). Most are unable to walk by the age of twelve (2). Affected muscles may look larger due to increase fat content. Scoliosis is also common. Some may have intellectually disability. Females with a single copy of the defective gene may show mild signs and symptoms. This disorder is X – linked recessive, two thirds of cases are inherited from a person's parents while one third of cases are due to a new mutation (3). It is caused by a mutation in the gene for the protein dystrophin (3, 4). The present study enrolled 235 subjects including 55 DMD patients and 180 healthy controls. DMD was characterized by elevation of serum ALT, AST, ALP, LDH, and CK respectively.

Aim

The objective of this study to ascertain the serum levels of transaminoferases, alkaline phasphatase, lactate dehydrogenase in patients with DMD to correlate with muscle enzyme such as creatine kinase.

Introduction

The Duchnne's Muscular Dystrophy (DMD) is a X – linked recessive, two thirds of cases are inherited from a person's parents while one third of cases are due to a new mutation. It is caused by a mutation in the gene for the protein dystrophin. The serum Alanine Aminotransferase (ALT), Aspirate Aminotransferase (AST), Alkaline Phosphatase (ALP) and Lactate Dehydrogenase (LDH) are components of comprehensive blood panels and collectively demonstrate liver function [5,6,7]. Consequently in apparently healthy children,analysis of these liver enzyme is performed more frequently than analysis of serum Creatine Kinase (CK) a more specific marker of muscle disease [8,9] Particularly in rural areas, a child isolated hypertransaminasemia, being affected by cryptogenic hepatopathy, could be monitored only with liver function tests for a long time before serum CK is analysed or before a muscular disease. Become clinically obvious, thus delaying diagnosis and treatment [10,11,12].

Materials and Methods

The present study enrolled 235 subjects including 55 DMD patients and 180 healthy controls. DMD was characterized by elevation of serum ALT, AST, ALP, LDH and CK respectively. These parameters were measured in COBAS C -311 in serum of the DMD patients and healthy controls.

Results

In this series the serum ALT, AST, ALP, LDH, and CK levels were found to be raised significantly in patients with biopsy – proven DMD Statistical analysis was performed and was reported as the mean and standard deviation (mean $\pm$ SD) and found p value < 0.05 [13,14,15].

Table 1: Shows different serum value of DMD patients and healthy controls

Parameters	Patients	Controls
ALT	55 U/L	5 – 45
AST	48 U/L	5 – 45
ALP	110 U/L	28 – 88
LDH	254 U/L	114 – 240
CK	350 U/L	20 – 220

P < 0.05

Discussion

The present study is retrospective analysis of serum levels of ALT, AST, ALP, LHD, and CK from patients with DMD originally diagnosed according to clinical or genetic diagnoses. Although serum CK testing is an easy, sensitive, and inexpensive test for DMD diseases, it appears to be underutilized in routine clinical practice. In apparently healthy children, aminotransferases ALT, AST, ALP, LDH levels are assessed more frequently than CK 15. The transaminases (ALT, AST), alkaline phophatase(ALP) and lactate dehydrogenase (LDH) may be the only targets analysed before signs and symptoms of Duchenne's Muscular Dystrophy (DMD) disease become clinically obvious in patients with incidentally elevations in ALT,AST, ALP, LDH levels. In the presently, a high frequency of patients with DMD presented with abnormal levels of ALT, AST, ALP, and LDH. In all patients in myopathties up to 95% with DMD had elevated ALT, AST, ALP, and LDH values.

Conclusion

The presence of serum ALT, AST, ALP, LDH, and CK in patients with muscular dystrophy should be attributed to muscle breakdown rather than to liver pathology and such patients should not be over – investigated for liver disease. In the absence of liver pathology, raised serum ALT, AST, ALP, LDH may be an early sign of occult muscular dystrophy and such patients should have serum CK levels checked to look for evidence of muscular dystrophy [16,17,18,19,20].

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