

Comparison of the changes in the biochemical parameters of sportsmen who stopped doing sports and sportsmen who are already engaged in sports

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Abstract

Objective: The aim of this study was to investigate the changes in the biochemical parameters of the sportsmen who have left the sport and are still active.

Materials and Methods: The research group consisted of 30 males between the ages of 18-45 in Diyarbakır province. Fifteen of these thirty people whose blood samples were received were people who were engaged in long-distance running for more than 5 years and are still active sportsmen. The other sportsmen are those who did this sport for more than 10 years but stopped doing afterwards. The data obtained was analysed by SPSS (Statistical Package for Social Sciences) for Windows 22.0 program on the computer. One-way anova test was used to examine the differences between the subjects who engaged in sports and who stopped doing the sport. Scheffe test was used to determine the difference group. The significance level was determined as $p < 0.05$.

Findings: There was no significant difference in TROPONIN I value in the biochemical parameters of those who stopped running long-distance and those who are still active long-distance runners, while there were statistically significant differences in ALT, AST, LD and CK MB values. This significant difference is thought to be caused by skeletal muscle damage caused by the severity of the training.

Conclusion: In the studies carried out in the literature, it can be seen that the different parameters are discussed in the blood parameters of the sportsmen, and the tests that are important for the heart health and livers of the sportsmen, as in our research, will be useful to obtain information about the health of sportsmen.

Keywords: Alt, Ast, Ld, Ck Mb, Troponin I

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** This study is excluded from the doctoral thesis.*

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INTRODUCTION

The desire to be healthy and to stay healthy is one of the main goals of all people. This aim has been adopted by all segments of the society and a page on health is devoted in daily newspapers and magazines, and health programs are found on all television channels. It is seen that health, which has an important place in human life, causes positive developments as a result of regular sports activities (1).

Today the results of comparative research conducted in different countries of the world show that sports and exercise play a therapeutic role in both preventing diseases and healing of diseases (2).

Sports may cause some changes in the human body, especially the cardiovascular system, both biochemically and anatomically. However, these changes are sometimes evaluated negatively and may cause sportsmen to stop doing the sport during their most productive periods. In order to prevent such a situation, it is a must to determine what causes the problem according to the results of sportsmen by checking their ALT, AST, LD, CK MB, TROPONINE I blood parameters. The level of alanin aminotransferase (ALT) in the blood is measured by ALT test. The level of ALT enzyme in blood produced in different organs and tissues in the body helps to diagnose some diseases or to eliminate the diagnosis (3).

AST (Aspartate Aminotransferase) is a liver enzyme that provides clues about organ problems. Its amount in the body is determined by blood tests and it is considered necessary to read it together with ALT values in order to interpret it healthy (3).

LDH as an enzyme contributes lactic and pyruvic acid to turn into each other. LDH is frequently found in heart muscle, skeletal muscle, kidney, liver and red blood cells. The lactate dehydrogenase test measures the level of Lactate dehydrogenase enzyme in the blood (Lactate dehydrogenase is abbreviated as LDH or LD) . LDH is an enzyme required in the cell for energy production. Not only is it found in cells in need of energy in the body, but also in all cells in the body (4).

The troponin test measures the level of troponin (TnI or TnT) in the blood. Troponin is a protein found in the skeletal and heart muscle fibres in the human body. Troponin is available in three different forms. These are TnT, TnI and TnC. These three molecules work together and provide muscular contraction. Troponins in skeletal and heart muscle differ from each other slightly. Thanks to this feature, they are used to diagnose heart attack (5).

However, CK in different tissues and organs is in three different forms depending on the tissue in which it is located: While CK-MM is mostly in skeletal muscle, CK-MB is mostly in heart muscle, and CK-BB is mostly in the brain and in smooth muscles such as intestine and uterus in small quantities. When a damage occurs in heart muscle, that is, in case of a heart attack, determining the level of CK-MB that increases in the blood helps to understand that the person has a heart attack (6).

MATERIALS AND METHODS

Research group consists of 30 males between the ages of 18-45 in Diyarbakır province. Fifteen of these thirty people whose blood samples were taken are those who have run long distance for more than 5 years and are still active sportsmen and the other sportsmen are those who did this sport for more than 10 years but stopped doing it later. ALT, AST, LD, CK MB, TROPONINE I blood parameters taken from the sportsmen were obtained from Dicle University Medical Faculty Hospital Laboratory. The blood samples were analysed by SPSS (Statistical Package for Social Sciences) for Windows 22.0 package program on the computer. Differentiations between the subjects doing sports and stopping doing sports were examined by one-way ANOVA test. Significance value was determined as $p < 0.05$.

FINDINGS

When the data in Table 1 are examined, there was no significant difference in TROPONIN I levels according to sporting status parameter ($p > 0.05$). Doing sports does not significantly affect TROPONIN I levels. However, when the data in Table 1 are examined, a significant difference was found in ALT, AST, LDH, CK MB values ($p < 0.05$).

Table 1. Differentiation of Blood Parameters According to Sports Status

Those who stop doing sports			Active Sportsmen			
Parameters	Mean	s.s	Mean	s.s	f	p
ALT	18,53	11,39	28,20	16,35	3,49	0,03
AST	17,66	3,81	29,80	13,85	10,58	0,00
LDH	170,13	22,99	207,66	37,04	5,22	0,00
TROPONIN I	0,003	0,005	0,005	0,007	0,832	0,442
CK MB	1,45	0,65	6,79	6,33	10,74	0,00

DISCUSSION

In our study, blood parameters of those who stopped long-distance running and who are actively running long-distance were examined. It was found that there were statistically significant differences in ALT, AST, LDH and CK MB values in the blood parameters of the participants, except for TROPONIN I values. ALT, AST, LDH and CK MB values of long distance runners were found to be significantly higher than those who stopped running long distance. TROPONIN I values of active sportsmen were higher than those who had stopped long distance running, but the extent was not statistically significant.

Mashiko et al. determined that there was a significantly increase in the ALT and AST levels after a 20-day training program for sportsmen 7 (7).

Şentürk determined in his study carried out on handball players that there was a significantly increase in the ALT, AST and LDH values after the competition (8).

Çetinkaya determined in his study conducted on football players that there was a significantly increase in the ALT, AST LDH, and CK-MB values after the eight-week training program (9).

Ohba et al. determined in their study carried out on 10 sportsmen participating in the 140100 km ultra-marathon race that Troponin T levels are higher than normal in 9 of 10 players (10).

Ayhan et al. determined in their study carried out on 22 elite professional players that there was a decrease in LDL levels after a 90-minute football competition, and they stated that there was a significantly increase in HDL levels (11).

While some studies in the literature support our study, the results of the study carried out by Ohba et al. show different results from our study.

CONCLUSION AND RECOMMENDATIONS

As a result, it is thought that the significant changes in blood parameters of elite sportsmen during and after sport stop are not caused by any problems and are caused by muscle damage due to overload in active sports. In the studies carried out in the literature, different parameters in the blood parameters of the sportsmen are taken into consideration and the tests, which are important for the heart health and liver of the sportsmen as well as in our study will be useful for obtaining information about the health of the sportsmen.

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