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STUDY OF SOME BIOCHEMICAL CHANGES IN PATIENTS INFECTED WITH IRON DEFICIENCY ANEMIA IN KARBALA CITY

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ABSTRACT

This study conducted to know changes that occur for some biochemical parameters in patients with iron deficiency anemia to important these changes in identification, determine, and know some factors and response of patient to treatment and total samples are 200 sample divided into 100 sample patient and 100 sample as control from male only about 20–60-years old. This study included measured some of liver enzymes such as aspartate amino transferase (AST), alkaline phosphatase(ALP) and alanine amino transferase(ALT) and this study present significant increase ($P \leq 0.05$) in liver enzymes level compared with control group.

Keyboards: iron deficiency anemia , aspartate amino transferase, alkaline phosphatase

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INTRODUCTION

Worldwide anemia and specifically iron deficiency anemia is the most common organic disease of the population; it affects individuals in developed and developing nations. Iron deficiency anemia is principally a disorder of women, infants and children, the elderly, and the urban poor **(1,12).** Nutritional anemia refers to a condition in which the hemoglobin content of the blood is lower than normal as a result of a deficiency of one or more essential nutrients (usually iron, less frequently folate or vitamin B_{12}) regardless of the cause of such deficiency. There are no sharp cutoff points below which anemia can be stated as present. However, standards below which anemia is likely to be present at sea level have been set out by WHO. Anemia is diagnosed by hemoglobin concentration **(2).** It is generally held that at least half of the anemia worldwide is due to nutritional iron deficiency, and that subclinical iron deficiency, also related to functional disadvantages, is as widespread as iron deficiency with anemia therefore, anemia prevalence can generally be taken as an indicator of the extent and trends of iron deficiency **(3).** In adults (persons aged greater than or equal to 18 years), iron deficiency anemia among laborers (e.g., tea pickers, latex tapers, and cotton mill workers) in the developing world impairs work capacity; the impairment appears to be at least partially reversible with iron treatment **(4) (5)**. It is not known whether iron deficiency anemia affects the capacity to perform less physically demanding labor that is dependent on sustained cognitive or coordinated motor function **(4)**. In the liver, the enzyme catalase is an important part of critically important “phase II” detoxification. Catalase works with superoxide dismutase to breakdown hydrogen peroxide. Circulating peroxidase enzymes scavenge reactive oxygen from free radicals,this protects the lipid bilayer of cell membranes **(6).**

MATERIALS AND METHODS

study groups and blood samples collection

this study included 200 sample divided into 100 sample patient and 100 sample as control about 20-60 years old. taken 5ml of blood sample and placed in centrifuge for 10 minutes after waiting for 45 minutes to separate serum from whole blood. Serum samples stored in refrigerator (-20c°). Serum samples were used for measurement liver enzymes levels.

Medical tests

In this study estimated liver enzymes such as aspartate amino transferase (AST), alkaline phosphatase(ALP) and alanine amino transferase(ALT) by uses refletron system by strips.

Statistical analysis

The data were presented as mean ±SE and subjected to analysis of variance by using one way ANOVA Post hoc test was used LSD to specify the significant difference among means the software package IBM SPSS Program version 20 was used for the analysis of data **(7).**

Results

Table) effect of iron deficiency anemia on some liver enzymes(AST), (ALP), (ALT) (Means ± SE)

Parameters / Groups	AST (U/L)	ALP (U/L)	ALT (U/L)
Patient persons	**A** **4.38 ± 2.18**	**A** **138.45 ± 48.59**	**A** **6 ± 2.74**
Healthy persons	**B** **2.92 ± 1.38**	**B** **56.03 ± 15.93**	**B** **3.58 ± 1.24**

N=100

Different letters represent a significant difference at (p≤0. 05)

DISCUSSION

The study proved that there was significant increase in the level of Allkaline phosphatase (ALP), Aspartate aminotransaminase (AST) and Alanine aminotransaminase (ALT). In patients with iron deficiency anemia in comparison with normal subjects of the control groups in all age groups of the study. The ALT showed lower increase than other two enzymes (AST and ALP) in patients, this pointed that ALT has cytosolic form whereas AST has both cytosolic and mitochondrial forms i.e., AST is more prominent than ALT. Usually when liver damage occur, increment of ALT and AST occur but the increment in AST is higher than that of ALT (**8) (9).** The role of iron in the body is almost exclusively confined to the processes of cellular respiration. Iron porphyrin (heme group)are essential components of hemoglobin, myoglobin, the cytochromes and enzymes (catalase and peroxidase) (**6).** Iron level decrease may be lead to lack of catalase and peroxidase enzymes,this result in accumulation of hydrogen peroxide in the liver; this is toxic and harmful substance inside the cells which result in liver cell damage (**10) (11).**

REFERENCES

1. Cox TM. (2001): Investigating Anaemia and Iron storage disease.
2. Looker AC, Dallman PR, Carrol MD, et al., (1997): Prevalence of iron deficiency in the United States, JAMA, 277; 973-6.
3. 3-WHO report, (2001): Guidelines for the control of iron deficiency in countries of the Eastern Mediterranean, Middle East and North Africa.
4. Cook JD, Skikne BS, Baynes RD (1994):. Iron deficiency: the global perspective. In: Hershko C, Konijin AN, Aisen P, eds. progress in iron research, New York, NY: plenum press; 219-28.
5. Li R, Chen X, Yan H, et al. (1994): Functional consequences of iron supplementation in iron deficient female cotton mill workers in Beijing, China, Am J Clin Nutr, 59(4); 908-13.
6. Junqeira LC, Carneiro Jose, Kelly KO. (1998): Basic Histology, 9th edition, Large Medical Book; 39-40.
7. SPSS Statistical Packages for the Social Sciences. (2001): Statistical software for windows version 13.0 Micrisoft. SPSS, Chicago, IL, USA.
8. Haber MM, West AB, Haber AD, Reuben A. (1995): Relationship of amino transferases to liver histological status in chronic hepatitis C, Am J Gastroentevol, 90; 1250-7.
9. Heale CJ, Chapman RW, Fleming KA. (1995): Liver histology in hepatitis C infection: a comparison between patients with persistently normal or abnormal transaminases, Gut 37; 274-8.
10. Sherman KE. (1991): Alanine aminotransferase in clinical practice, Arch Intern Med 151; 260-5.
11. Johnston DE. (1999): Special considerations in interpreting liver function tests. Am Fam Physician, Apr 15, 59 (8); 2223.
12. Lames H Almanseekanaa, Raed H Ogaili, Sameem SM. Interpretations of hematological findings among Iraqi children with celiac disease in Kerbala city Baker. International Journal of Research in Pharmaceutical Sciences, 2018;10(2)641-644