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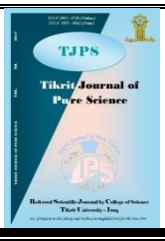

Study the relationship between the liver functions and interleukin- 10 in female thalassaemia patients in Kirkuk city

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ABSTRACT

This study was conducted in thalassaemia center at Azadi Teaching Hospital in Kirkuk city from the beginning of August 2017 to the end of April 2018. One hundred female subjects were participated in the study (70) thalassaemic patients and Thirty (30) persons as control group how they were non thalasaemic. with no family history of hereditary blood disease attendants to different clinics of Azadi hospital, who were assessed by a clinician. All subjects were aged between 8- 15 years. Age and body mass index (BMI), were measured for all subjects in this study and used for the measurement of serum interleukin10, serum feritine, serum (GOT), Serum (GPT), serum (ALP) and total serum bilirubine.

The results of current study showed that serum alkaline phosphate (ALP), Serum Alanine transaminase (ALT), serum Aspartate transaminase (GOT), Total serum bilirubine are Highly significance increase ($p<0.01$) in thalassaemic patients when compared to control group.

In Conclusion, serum interleukin-10(IL-10) has high significant increases level in thalassaemic patients compared to control group.

Introduction

intestine, proximal convoluted tubule of the kidney, bone, liver, and placenta**[5]**

Serum bilirubin is one of the end products of haem metabolism and is derived from the haem part of the hemoglobin molecule. It is a yellow coloured pigment**[6].**

Interleukin 10 (IL-10), also known as human cytokine synthesis inhibitory factor (CSIF), is an anti-inflammatory cytokine**[7].** In general, the main biological functions of IL-10 are to decrease or regulate the inflammatory response produced by dendritic cells and macrophages, as well as reducing the adaptive responses of T cells. This cytokine is a potent inhibitor of antigen presentation as it reduces the expression of the major histocompatibility complex class II (MHC II) and the accessory co - stimulatory molecules by dendritic cells. The overall effect is to inhibit the maturation of these cells[**8].**

It can also promote B-cell activation and stimulate Natural Killer cell (NK-cell) proliferation. When IL-10 is produced and secreted, it acts specifically on

The liver is the largest gland in the body . Its essential for life because it conducts avast array of biochemical and metabolic function ,it is located in the right upper quadrant of the abdomen, below the diaphragm. The liver is an accessory digestive gland that produces bile, an alkaline compound which helps the breakdown of fat[1].. Liver function tests (LFTs or LFs) are groups of blood tests that give information about the state of a patient's liver**[2]**.Liver function tests are a group of tests done to assess the functional capacity of the liver as well as any cellular damage to the liver cells.

Alanine transaminase (ALT) is an enzyme found in high concentrations in liver, also found in kidneys, heart, and muscles. It catalyzes the transamination reaction, and only exists in cytoplasmic form **[3].**

Aspartate transaminase (AST) AST exists in two isoenzymes form mitrochondrial and cytoplasmic form. It is found in highest concentration in the heart, liver, muscle, and kidney **[4].**

Alkaline phosphatase (ALP) is an enzyme in the cells lining the biliary duct of the liver. It can also can be found in the mucosal epithelium of the small

of natural or recombinant IL-10 concentrations within any experimental sample including cell lysates, serum and plasma. This particular immunoassay utilizes the quantitative technique of a "Sandwich" Enzyme-Linked Immunosorbent Assay (ELISA) where the target protein (antigen) is bound in a "sandwich" format by the primary capture antibodies coated to each well-bottom and the secondary detection antibodies added subsequently by the investigator[14].

Statistical analysis

The data were analysed as a mean and standard deviation. T test was used to compare the mean of different variables. The P value> 0.05 was considered statistically significant, and for result which its P value was less than 0.01 was considered highly significant, while for those which its P value was greater than 0.05 considered non - significant statistically.

Results

Age distribution and anthropometric result:

The age, body weight and height of control and thalassemia patients were presented in table **(1).**The mean age for thalassemia females is (12.5 ± 2.7 years), and the mean age for control healthy female subjects is (13.4 ± 3.3 years).

Table 1 The mean and standard deviation of age, body weight and height;

Parameters	Control (30)	Patients (70)	P value
Age (years)	13.4 ± 3.3	12.5 ± 2.7	NS
Body weight (Kg)	54.6 ± 9.1	33.7 ± 6.8	0.01
Height (Cm)	152.7 ± 6.3	135.6 ± 12.4	0.05
BMI (Kg/m2)	23.8 ± 2.85	17.3 ± 4.1	0.001

Liver enzymes results:

There are significant increases in GOT and GPT enzymes activities in thalassemia female patients as compare with control female subjects, ($p \leq 0.01$) .

Table (2) the mean and standard deviation of GOT, GPT, ALP and bilirubin in controls and thalassemia patients.

Parameters	Controls	Patients	P value≤
GOT (U/L)	28.6 ± 4.1	56.2 ± 15.3	0.01
GPT (U/L)	12.1 ± 3.4	23.4 ± 3.7	0.01
ALP (U/L)	19.8 ± 4.2	23.4 ± 3.4	0.01
Bilirubin	0.18 ± 0.01	1.71 ± 0.3	0.01

The level of Serum ferritin and IL-10 in control subjects and thalassemia patients:

Table(3)The mean and standard deviation of serum ferritin and IL-10 in control and patients

Parameters	Controls	Patients	P value
S. Ferritin (ng/ml)	53.6 ± 7.9	3109 ± 735	0.001
IL-10 (pg/ml)	7.02 ± 1.9	18.1± 5.8	0.01

Discussion

In the present study, there was significant reduction in body weight and height of female thalassaemic patients as compare with female control subjects.

the IL-10 receptor, the structure of which consists of two subunits; IL-10 receptor1 and IL-10 receptor 2.

IL-10 has emerged as a key immunoregulator during infection with viruses, bacteria, fungi, protozoa, and helminths that are responsible for much of the immunopathology associated with infections including Toxoplasma gondii **[9],** Trypanosoma spp. [10],Plasmodium spp., Mycobacterium spp., malaria **[11].**

The aim of the study :

is to determine the relation of the liver function tests and IL-10 in female thalasemic patients in Kirkuk city.

Materials & Methods

1.Expermmental degsined:

The study was a carried out in Kirkuk City from the beginning of August 2017 to the end of April 2018. A total number was100 female subjects, (aged from 8-15years) were distributed as following

-Group1: 70 thalassemia patients.homozygous β-thalassaemia major.

-Group 2: **Control group**; Thirty female normal apparently healthy subjects. Age matched, non thalassemia, with no family history of thalassemias.

2.Biochemical tests:

1.Aspartate aminotransferase assay, (GOT) and Alanin

Plasma/serum test for glutamic oxalacetic transaminase (Aspartate aminotransferase).

Principle of the measurement:

plasma or serum is deposited on The slide is incubated at 37 C0 and the GOT in the sample catalyses the amino-transition reaction with the substrate of L – aspartic acid after spreading uniformly in the spreading layer.

2.Alanine aminotransferase assay,

Plasma/serum test for glutamic pyruvic transaminase, (GPT) or (Alanine aminotransferase- ALT).

Principle of the measurement:

plasma or serum is deposited on The slide is incubated at 37 C0 and the GPT in the sample catalyses the amino-transition reaction with the substrate of L – Alanine after spreading uniformly in the spreading layer. Pyruvic acid produced by the reaction generates hydrogen peroxide by pyruvate oxidase (POP)[12].

3.Alkaline phosphatase assay:

Plasma/serum test for alkaline phosphatase

Principle of the measurement:

plasma or serum is deposited The spotted specimen is incubated at 37 C0 and catalyses the hydrolyzing reaction of co-existing p-nitro phenyl phosphate while spreading uniformly in the spreading layer. The p-nitro phenyl dye formed with the start of the reaction is diffused and collected in buffer layer[13].

4. Determination of IL 10 by Enzyme Linked Immunosorbent Assay

Principle:

The OmniKine Human IL-10 ELISA Kit contains the components necessary for quantitative determination

female thalassemia patients (23.4 ± 3.4) as compare with control female subjects(19.8 ± 4.2)

In the present study, it is believed that the elevation in GOTactivity might be due to the iron overload seen in these thalassaemic patients. On the other hand, GPT is highly specific for hepatocellular damage, and could be due to liver damage secondary to iron overload, [15,16]

There is a highly significant increase ($p \leq 0.001$) in the concentration of serum IL10 in thalassemia female patients (18.1± 5.8) as compare to control female subjects (7.02 ± 1.9).

IL-10 is a potent stimulator of B cells in one way and a strong inhibitor of antigen-presenting cells and T cells in another way. Therefore, it plays an important role in immune and inflammatory process and aberrant expression of IL-10 contributes to the development of autoimmune diseases, [17]

There is significant Decrease in body weight of thalassemia patients as compare with control healthy female subjects, ($p \leq 0.01$).

Moreover, there is significant reduction in body height of thalassemia patients (135.6 ± 12.4 cm) as compare with control healthy female subjects, ($p \leq 0.05$). At the same time, a significant ($p \leq 0.01$) reduction in the mean of body mass index (BMI) was found in thalassemia females as compared to control female subjects .

There is a high significant increase ($p \leq 0.01$) in the concentration of serum GOT enzyme in female thalassaemic patients (**56.2 ±15.3 mg/dl**) as compare with female control subjects (**28.6 ±4.1 mg/dl**). Also, there is a high significant increase ($p \leq 0.01$) in the concentration of serum GPT enzyme in male thalassaemic patients (**23.4 ±3.7 mg/dl**) as compare with female control subjects (**12.1 ±3.4 mg/dl**),Also, a significant elevation in the concentration of ALP in

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دراسة العلاقة بين وظائف الكبد والانترلوكين-10 من مرضى الثالاسيميا لاناث في مدينة كركوك

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الملخص

وقد أجريت هذه الدراسة في مركز الثلاسيميا في مستشفى آزادي التعليمي في مدينة كركوك من اغسطس 2017 إلى نهاية أبريل2018. جمعت عينات الدم من مائة انثى في البحث الموسوم (30 بحالة صحية طبيعية 70 مريضا مصابات بالثلاسيميا من نوع بيتا) حيث تم التاكد من عدم وجود تاريخ عائلي لمرض الدم الوراثية في مستشفى آزادي، والذين تتراوح أعمارهم ما بين 8 إلى 15 عاما. وقد تم اخذ المعلومات الكاملة من عينات الدراسة (العمر , والطول , كتلة الجسم). ثم قياس مستوى انترلوكين -10 والبلروبين الكلي وانزيمات الكبد.

حيث لوحظ في النتائج هناك انخفاض كبير في وزن الجسم لمرضى الثلاسيميا (33.7 ± 6.8 كيلوغرام) مقارنة مع الاناث اللائي يتمتعن بصحة جيدة، (54.6 ± 9.1 كغم)، .($p\leq 0.01$).

وهناك انخفاض معنوي للغاية ($p\leq 0.01$) في تركيز هيموغلوبين الدم في مرضى الثلاسيميا الأنثوية (8.31 ± 1.3 غ / دل) مقارنة باناث المجموعة السيطرة (12.9± 0.7 غ/ دل). أيضا، هناك انخفاض كبير في قيمة PCV ($p\leq 0.01$) في الإناث (33.8 ± 6.1 ٪) مرضى الثلاسيميا مقارنة مع الإناث من المجموعة السيطرة (40.6 ± 3.1 ٪)