Some Physiological Tests For Patients With Cutaneous Leishmaniasis in The Holy Karbala Province

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الخلاصة

داء الليشمانيات هو مرض طفيلي شائع يصيب الكلاب والقوارض البرية والبشر يسبب مشاكل صحية لتأثيره على صحة الفرد وعلى نفسيته نتيجة لتركه اثار على الجلد بعد الشفاء وينتقل المرض عن طريق ناقل المرض الذي يسمى(ذبابة الرمل.(استخدمت في الدراسة الحالية (30)عينة من المصابين بداء الليشمانيات (12) عينة من الإناث و (18) عينة من الذكور و (10) عينات من الأفراد الأصحاء كمجموعة سيطرة. جمعت العينات خلال المدة من (1/ 9/ 2016) ولغاية (1/ 2/ 2017) وتم قياس عدد من الهرمونات (TSH، T3، T4،GH) باستخدام جهاز (Mini VIDAS) وباستخدام عدة التحليل (kits) الفرنسية المنشا وقياس ((WBC, Lymphocytes neutrophils, باستخدام جهاز(Automated Haemacounter). أظهرت نتائج الدراسة بوجود فرق معنوي بمقدار ($p\leq 0.001$) بين الذكور والإناث ولم يكن هناك فرق احصائي معنوي بين أعمار المرضى. كما اظهرت الدراسة وجود فروقات معنوية لهرمون النمو GH,هرمونT3 وTSH، مقارنة مع مجموعة السيطرة، في حين لم يظهر اي فرق معنوي في مستويات هرمون T4مقارنة مع مجموعة السيطرة. بينت النتائج وجود فروق معنوية ($p\leq 0.002$) في عدد WBC مقارنة مع مجموعة السيطرة، ولم يظهر اي فرق معنوي في اعداد، Lymphocytes neutrophil مقارنة مع مجموعة السيطرة. استنتجنا من الدراسة أن عدوى داء الليشمانيات لاتشكل خطر على مستويات هرمون المرضى فيما يتعلق بالهرمونات المقاسة من خلال البحث بمستوى الثقة (95٪).

الكلمات المفتاحية

داء الليشمانيات، الليشمانيا الجلدية، الهرمونات (TSH، T3، T4، GH).

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Abstract

Leishmaniasis is a common parasitic disease that affects dogs, wild rodents and humans that causes health problems for its effect on the individual's health and psychology. The disease is transmitted by a disease vector called sand fly. In the present study30 samples were taken from people infected with cutaneous leishmaniasis (12 females and 18 males) and (10) healthy individuals as a control group. The samples were collected from (1/9/2016) to (1/2/2017). The mini Vidas device were used to examine the (TSH,T3,T4.GH) and the haemacounter devise used to count the (WBC, Lymphocytes, neutrophil. Results showed significant differences ($p \leq 0.001$) between males and females, while there were nosignificant differences in age... However, the levels of GH, TSH and T3 were significantly different as compared to the control group... On other hand, no significant differences in the level of T4 hormone were compared to the control group. WBC counts were significantly different ($p \leq 0.002$) as compared to the control group. While, there were no significant differences in the count of (neutrophils and lymphocytes) as compared to the control group. The study found the infection by cutaneous leishmaniasis did not have arisk for hormones levels that measured by searching with confidence level (95%).

Keywords

Leishmaniosis, Cutaneous Leishmaniosis, TSH, T3, T4, GSH.

1. Introduction:

Cutaneous Leishmaniasis [CL] a zoonotic skin disease that caused by protozoan species of the genus Leishmania, such as L. (Viannia) braziliensis, L. (V) guyanensis and L. (V) panamensi, humans are infected through the bite of female insect phlebotomine sandflies [1,2]. leishmania promastigotes of leishmania are insert to the skin when feeding on the blood of the host, promastigotes invade the cells of the phagocytic system then transform into amastigotes, multiply within phagolyso somes and invade other cells in the body [1]. According to recent reports, this disease considered to be a growing public health concern in the world as it was found in 1.5 million new cases per year in 88 countries with an estimated 20,000 to 40,000 death severy year [3,4]. Two epidemiological forms of the CL are present in Iraq, zoonotic [ZCL] and anthroponotic CL [ACL], the ACL is urban type that caused by Leishmania tropica and main vector and reservoir of the disease are Phlebotomus sergenti and human, accordingly [5,6]. The ZCL is rural type and it is caused by Leishmania major (L. major). The vector and reservoir are Phlebotomus papatasi and rats [7]. Cutaneous leishmaniasis in the Old World is caused byLeishmania major, tropica, L. and L. aethiopica. New Worldleishmaniasis is caused by L. amazonensis,. L. Mexicana, andL. Braziliensis .[8]. cutaneous leishmaniasis is known to be endemic in Rajasthan State in India [9]. About 20000 Cases of LC recorded in many parts of Iran such as Kashan, Khuzestan, Tehran, Shiraz, Kerman, Bam, Mashhad, Sabzevar and Neishabour citi [10]. In recent years many factors causes significant increase of LC disease such as uncontrolled urbanization, war, environmental changes and agricultural lands converting with residential form caused morecontacts between vectors of the leishmaniasis and humans [11]. In the last two decades there was a significant increase in the cases of CL in the New World, including Peru, Bolivia, andBrazil [1]. In Algeria CL is a major public health problem, that endemic in 40 of the 48 provinces, with 10 million populations at risk of the infection [12]. In Iraq the cases reported for CL about 1655 for years 2004-2008, on other hand 8300 to 16,500 annual CL incidence which considered moderate underreporting [13]. The endemic of CL is majority of Middle Eastern countries, this disease is declining in time in some countries such as Saudi Arabia but spread continues in other countries such as Iraq and Syria [14,15]. In recent years, epidemiologic information for CL was found basic evidencefor appropriate control strategies in order to fight disease and prevent the spread of infection to other regions.

2. Materials and method:

In the present study, data were collected from AL-Hussein city hospital in Karbala province for the period from September 2016 to February 2017 and included 30 cases (12 females, 18 males) of clinically diagnosed as CL as compared to 10 intact persons as a control

group. Clinically diagnosis was based on lesion characteristics and epidemiological data, as well as laboratory diagnosis performed by chosen the most indurate margin lesions then cleaned with normal saline in order to provide appropriate smears on the slides. The samples were then stained with Giemsa for 20-30 min and examined microscopically for presence of amastigotes agents [11].

3. Blood sample collection and hormonal assay:

5 ml samples of venous blood were taken from each individuals. Blood sample (1 ml) was placed into tubes that contained an anticoagulant. Total WBC, neutrophils and lymphocytes were measured using (Automated Haema counter) device. While, blood samples (4 ml) were placed into anticoagulant free tubes and left at room temperature for (30) minutes. Serum was separated after centrifuged at 3000 rpm/10minutes then processed for hormonal assays (GH, TSH, T4 and T3) using the mini VIDAS and using the established French kits.

4. Statistical analysis:

Data were analyses by using (SPSS system, version 20). Differences among groups were measured using one-way analysis of variance (ANOVA) followed by the least significant differences. The differences were considered statistically significant at($P\leq0.005$) and ($P\leq0.001$) [16].

5. Results:

The results of present study showed a significant difference ($p\leq 0.001$) between males and females infected with CL as compared to the control group, there was no significant difference in mean age between patients and control groups, tables (1, 2). Also the results revealed significant differences ($p\leq 0.001$) in the concentration among (TSH, GH and T3) for infected groups as compared to the control group tables (3, 4). On other hand, no significant change in the concentration of (T4) hormone among infected groups with CL CL compared to the control group, table (4).. The differences of WBC and lymphocytes) were also significantly different between infected peoples with CL as compared to the control group, no statistically significant difference in the count of neutrophils between infected peoples with CL and the control group, table (5).

Table (1): Frequency distribution of cutaneous leishmaniosis according to gender in Karbala Province

Gender	Groups		Total	P value
	Leismania	Control		
Female	12	4	16	1
	75.0%	25.0%	100.0%	
Male	18	6	24	
	75.0%	25.0%	100.0%	
Total	30	10	40	
	75.0%	25.0%	100.0%	

Table (2): Frequency distribution of cutaneous leishmaniosis according to ages in Karbala Province

Groups Age/ years	N	Mean±SE	P value
Leismania	30	16.20±1.6	0.189
Control	10	12.20±1.86	

Table (3): effect of cutaneous leishmaniosis on the level of some hormones

Variable	Leishmania (n=30)	Control(n=10)	P value
	mean±SE	mean±SE	
GH ng/ml	1.02±0.25	5.9±1.9	0.001≤
TSH Miu/ml	2.52±0.27	1.51±0.3	0.023≤
T4 nmol/L	135.84±6.64	142.6±10.21	0.005≤
T3 nmol/L	2.54±0.109	1.92±0.15	0.005≤

Table (4): effect of cutaneous leishmaniosis on the level of some hormones

Variable	Cases (n=30)	Control (n=10)	OR(95%CI)
G H (Low)	7(23.3%)	0(0%)	6.7(0.39-inf.)
TSH(High)	5(16.7%)	1(10%)	1.8(0.15-46.49)
T4(High)	4(13.3%)	1(10%)	1.3(0.11-37.08)
T3(High)	4(13.3%)	0(0%)	3.5(0.18-inf.)

Table (5): effect of cutaneous leishmaniosis on the level of total number of WBC, Lymphocytes and Neutrophil

parameters	Leishmania	Control	P value
WBC $\times 10^9$ / L	9.181±0.42	6.81±0.299	0.002
Neutrophil%	56.31±1.89	59.63±2.44	0.346
Lymphocyte%	34.57±1.44	31.32±2.35	0.249

6. Discussion:

Iraq is one of countries that infected by cautanous leshmaniasis. In the present study showed significant differences in gender, this agreement with [17]. Our results showed significant decrease in GH and an increase in thyroid hormones (TSH, T3) while there was no change in T4 of leishmaniosis, this result in contrast with results reported by previous studies [18,19]. While this result in consistent with results obtained by other studies [20, 21] who showed an increase in the level of thyroid hormones in infected dogs with leishmaniosis. This can attributed to the stress on thyroid gland that causes an increase in circulating glycoprotein (prednisone, dexamethasone) and altered thyroid function. Leishmanosis, and other severe systemic diseases can cause thyroid syndrome by increase the production of pro-inflammatory cytokines, such as TNFα, IL-ß1, IL-6 and tumor necrosis factor (TNF) [22]. Other study showed this increase of thyroid hormone can attributed to inflammatory mediators that involved in changes in the thyroid by activity of pituitary diodinase, which causes conversion to triiodothyronine in the hypothalamus [23]. The result of present study showed significant difference in the

total number of WBC, While, no differences were found in the number of lymphocytes or neutrophils. This results are in agreement with results found by others [24]. While the present study contrast with results of other studies [25, 26] who demonstrated an increase in the number of neutrophils and lymphocytes in the patients suffer from leishmaniosis. An increase in the neutrophil counts was found within the first (30) minutes after the passage of the parasite in order to secretion of cytokines, chemokines and proteins of extracellular microbes derived from neutrophils (20). On other hand, the present results are in disagreement with results from the study by [27] who revealed an increase the number of platelets, and lymph cells as a result of the inflammatory process with patient leishmaniosis.

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