

Epidemiological Study of Cutaneous Leishmaniasis for Patients Reviewed at Samarra General Hospital

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Abstract

The current study aims to give a new picture of the epidemiology of cutaneous leishmaniasis for patients who referred at Samarra General Hospital and to determine socio-demographic information and finding a relationship between cutaneous leishmaniasis and CRP-protein. The current study conducted 100 samples suspected of having cutaneous leishmaniasis from subjects who referred at Samarra General Hospital during the period from November 2019 to March 2020. The results of the current study showed that the total incidence of cutaneous leishmaniasis was 30% of patients. December show the highest rate of infection reaching 40%. Outcomes show the highest infection rate in the age group (5-10 years) reached 56.7%. Also, rate of infection in the rural was 93.3% higher than the infection rate in the urban (6.6%) and that most of the ulcers were in the lower extremities 56.7%. Otherwise, the findings show CRP-protein was positive in 5(16.7%) patients and 25(83.3%) patients were negative. So, it is concluded that male patients are more prone to more severe infections than females and there are relationship between cutaneous leishmaniasis and CRP-protein

Keyword: cutaneous leishmaniasis; CRP-protein; infection rate.

Introduction

Cutaneous leishmaniasis is one of ten common parasitic diseases prevalent in tropical regions around the world; the World Health Organization (WHO) was supportive dealing with various aspects related to leishmaniasis, approximately (310) million people live under risk at infection with leishmaniasis [1]. 500,000 cases of visceral leishmaniasis and 1.5 million cases of cutaneous leishmaniasis [2]. A parasitic disease is endemic in Iraq [3]. The causative agent of cutaneous leishmaniasis is transmitted by the bite of an infected sand fly female from humans and reservoir animals (mainly domestic and wild rodents) to healthy people [4]. Clinical signs of the disease appear in the form of ulcers or skin lesions on the body that may remain for a year or more, although the disease is not fatal or dangerous, but it may leave scars or deformed scars that remain throughout life and have psychological effects on the infected. The epidemiology and prevalence of cutaneous leishmaniasis is related to several factors, including the characteristics of the parasite type, environmental and economic factors such as population growth, population migration, population expansion, agricultural activity, human habits and behavior, and climate changes [5]. The current study aims

to give a new picture of the epidemiology of cutaneous leishmaniasis for patients visiting Samarra General Hospital and to determine the rate of infection by gender, age, geographical distribution, months of the year, location and number of the lesion and the type of skin lesion, as well as trying to find a relationship between cutaneous leishmaniasis and CRP-protein.

Materials & methods

The current study conducted 100 samples suspected of having cutaneous leishmaniasis from subjects who referred at Samarra General Hospital during period from November 2019 to March 2020.

CRP-protein test

Blood samples were collected from patients with cutaneous leishmaniasis infection and the test was performed by using a CRP-protein kit.figure(2)

Statistical analysis

The analysis of outcomes was done by using statistic program known as SPSS (version 22). The data of current study were expressed as frequencies and percentages with several of results presented in tables.

Results

Epidemiological study

The results of the current study showed that the total incidence of cutaneous leishmaniasis was 30% of patients visiting Samarra General Hospital, and upon the distribution of infection by gender, it was found that males (76.7%) had a higher rate of infection than females (23.3%) as shown in Table (1).

Table (1): cutaneous leishmaniasis incidence according to gender

Gender		
Positive cases	Male	Female
30	23(76.66%)	7(23.34%)

The results of the current study showed a difference in an infection rate according to the months of the year, December recorded the highest rate of infection, reaching 40%, while January recorded the lowest rate of infection, which amounted to 6.7%, as in Table (2).

Table (2): prevalence of cutaneous leishmaniasis during year months

Months	Positive cases	Percentage (%)
2019 November	4	13.3%

2019 December	12	40%
January 2020	2	6.7%
February 2020	4	13.3%
March 2020	8	26.7%
total positive samples	30	30%

Table (3) shows the prevalence of infection according to the age group, as the highest infection rate in the age group (5-10 years) reached 56.7% and the lowest infection rate for the age group (1-5 years), reaching 10%.

Table (3): prevalence of infection according to the age group

Age group	Positive cases	Percentage (%)
1-5	3	10%
6-10	17	56.7%
11-15	4	13.3%
16-20	6	20%
total positive samples	30	30%

The results of the current study demonstrated that the rate of infection in the rural was 93.3% higher than the infection rate in the urban (6.6%) as shown in Table (4).

Table (4): the relationship between cutaneous leishmaniasis and residence location

Living	Positive cases	Percentage (%)
Rural	28	93.34%
Urban	2	6.66%

total positive samples	30	30%
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Through the distribution of the lesion according to the location of the sore in the body, it was found that most of the ulcers were in the lower extremities 56.7% and the least of which was in the upper extremities 13.3% and as shown in Table (5) and figure(1)

Table (5): infection rate according to sore location

Living	Positive cases	Percentage (%)
Head	9	30%
lower extremities	4	13.3%
upper extremities	17	56.7%
total positive samples	30	30%



Figure (1) :- lesion of cutaneous leishmaniasis

CRP-protein

By examining the CRP-protein test of blood serum samples, it was found that (5) sample 16.7% was positive and 25 samples 83.3% were negative as shown in Table (6).

Table (6): CRP-protein percentage

Test	Positive cases	Negative cases
CRP-protein	5(16.7%)	25(83.3%)

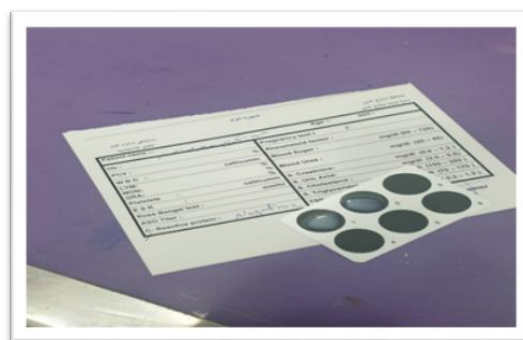


Figure (2):CRP-protein test

Discussion

The present findings which had been obtained demonstrated that patients gender have an important role in infection severity and its pathogenesis. It is clear from Tables 1 that male patients had higher rates of infections than female that agree with results of Al-khayat et al [6]. Females usually have higher immune responses compare to males. This immunity elevation among females is useful against infectious diseases especially parasitic diseases [7-8] that explain the results of current study. Otherwise, in animal model studies, Mice infected by *Leishmania* showed that males are more susceptible of infection compare with females [9-10]. The current findings show that December month was highest rate of infection. The Decreasing of cutaneous leishmaniasis patients in summer is back to absent of Sand fly. Where, could not be collected sand flies in the middle of July and August [11-12]. Low status of socioeconomic, large family's members and human behavior are other hardness for performing appropriate personal protective measures. Health education, vector control and notification of disease will be a significant starting point to stop and prevent the rise of disease Iraq [13]. The current results showed that the age range (6-10 years) was the highest incidence of CL. This outcome was agreed with other study which referred that age range over 5 years [14]. The overall incidence of CL is higher among people who are 5–14 years old. This age group is a school age group in Iraq for both genders and they are more likely to participate in outdoor activities and be exposed to sand fly-associated environmental status compare patients from other age groups. Further, leishmaniasis lead to development of life-time immunity [15] that may be participate to lower occurrence in the oldest age groups [16]. The results of the current study demonstrated that the rate of infection in the rural higher than urban that is agree with [17] who referred that most cases were recorded from rural population. Finally, the findings of current study showed CRP-protein was positive in 5(16.7%) patients and 25(83.3%) patients were negative. The elevated of CRP-protein synthesis and produce might have a protective rather and effect than pathological role in other parasitic infections e.g. malaria [18-19].

Conclusion

Male patients are more prone to more severe infections than females and there are relationship between cutaneous leishmaniasis and CRP-protein

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