



Survey Study of Cutaneous Leishmaniasis in Baghdad

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Abstract

The research included an epidemiological study of cutaneous leishmaniasis in Baghdad for two years (2019 and 2020). Data were collected from the Iraqi Ministry of Health in Baghdad public health departments for Al-Karkh and Al-Rusafa districts. The results of the positive examinations for cutaneous leishmaniasis for the two years mentioned came with 54 infections in Al-Rusafa district and 80 infections in Al-Karkh district for the year 2019, while in 2020, the infections in Al-Rusafa district were 201 infections and 152 infections in Al-Karkh district. The data were divided in terms of gender into males and females, so the percentage for the year (2019) was 15% for males and 12% for females, and in (2020) 44% for males and 29% for females. Data were divided according to their age received from their sources. On their basis, they were divided into seven groups and according to years; they are as the following: [(1-9) 5.13% for the year 2019 and 16.63% for the year 2020, (10-19) 4.31% for the year 2019 and 11.09% for the year 2020, (20- 29) 6.77% for the year 2019 and 10.88% for the year 2020, (30-39) 5.13% for the year 2019 and 11.70% for the year 2020, (40-49) 2.05% for 2019 and 9.45% for 2020, (50-59) 2.05% for the year 2019 and 7.8% for the year 2020, (59+) 2.05% for 2019 and 4.93% for 2020].

Keywords: Epidemiology, Cutaneous, Leishmaniasis, Baghdad.

1. Introduction

Leishmaniasis is a parasitic protozoan disease caused by *Leishmania* spp. More than ten million people are infected with the parasite found in around one hundred countries. [1]



[2]. The *Leishmania* spp. is a flagellated eukaryotic monocyte parasitic protozoan parasite. It resides in pharyngeal cells and is entrenched in the retinal lining of the vertebrate host, causing the disease leishmaniasis, which is spread by female sandflies of the *Phlebotomus* spp. The parasite's major reservoir hosts include dogs, foxes, and rodents [3].

The amastigote and promastigote are the two types of the *Leishmania* parasite. The first can be found in vertebral hosts, while the second in vector hosts and culture media [4]. There are three types of leishmaniasis: cutaneous, mucocutaneous, and visceral leishmaniasis. Cutaneous leishmaniasis is the most common type, causing a dry or moist sore on the skin that heals over time and leaves a scar [5].

Mucocutaneous leishmaniasis affects the mucosal membranes and skin of the nose and mouth. Visceral leishmaniasis, also known as Kala-azar, is the most acute form, causing hepato-splenomegaly and anemia. If left untreated, it can be fatal [6].

Several studies have been conducted to investigate the spread of cutaneous leishmaniasis in Iraq [7], [8] and [9]

2. Patients and methods

Patients and methods:-

Data were collected using a pre-prepared data collection in Baghdad, which form the patient data of Baghdad Health Departments [Al-Karkh and Al-Rusafa], Health Department/ Infectious Diseases Department/ Ministry of Health Public for two years (2019-2020). The number of infections in Baghdad in 2019 was (134 infections), and in 2020, it was (353 infections). It was noticed that the disease spread in Baghdad in 2020 more than its predecessor. This study dealt with the percentages of men and women. It then classified them according to their age by collecting the results of laboratory tests from the Iraqi Ministry of Health for two years (2019-2020). The results of the positive examinations for cutaneous leishmaniasis for the two years mentioned came with 54 infections in Al-Rusafa district and 80 infections in Al-Karkh district for 2019. In 2020, the infections in Al-Rusafa district were 201 and 152 in Al-Karkh district. So, 487 patients with cutaneous leishmaniasis were collected during the two years (2019-2020). In 2019, the number reached 134 infections, in which males were more likely than females: 15% males and 12% females. The number of infections in males reached 75, while in females, it was (59). In 2020, the situation was much worse, as the number of infections increased to more than twice the previous one, reaching 353 infections. This year also, males had more casualties than females, with a rate of 44% for males and 29% for females, as their number reached (215) in males. Among the women, it was (138) infections (**Table 1**). The prognosis of the disease depended only on the clinical picture, and a special questionnaire was filled out that included age and gender.

3. Results and Discussion

This study dealt with the percentages of men and women. It then classified them according to their age by collecting the results of laboratory tests from the Iraqi Ministry of Health for two years (2019-2020). The results of the positive examinations for cutaneous leishmaniasis for the two years mentioned came with 54 infections in Al-Rusafa district and 80 infections in Al-Karkh district for 2019. In 2020, the infections in Al-Rusafa district were 201 and 152 in Al-Karkh district. So, 487 patients with cutaneous leishmaniasis were collected during the two years (2019-2020). In 2019, the number reached 134 infections, in which males

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Table 1. Sex Distribution of the Study Sample

Variable	Number	%	
Gender (2019)	Males	75	15
	Females	59	12
Gender (2020)	Males	215	44
	Females	138	29

The results of the current study for the two years (2019-2020) indicate that the rate of male infection (59%) is higher than that of females (41%), and these results are consistent with [10], [11] and [12].

Men make up most of the work in open environments (farms and firms), wear fewer parts of clothing than women, and have probably more contact with sandflies during the evening [13]. And, sex hormone levels may influence the onset and progression of various parasitic illnesses, making males more susceptible to the protozoan infectious agent [14].

This study also dealt with the division of patients according to the age groups of the two years mentioned, where it was divided into seven groups: (1- 9) (10-19) (20-29) (30-39) (40-49) (50-59) (more than 59). In 2019, the category (20-29) topped the number of infections, rating 6.77% of the total for the two years, as the number in this category reached 33 infections. The last three categories were the least vulnerable to the risk of infection in terms of their injury rate of 2.05% of the total for the two years, with ten infections for each category, as shown in (**Table 2**). In 2020, the age group (1-9) was the most affected, rating 16.63%. The number of infections in this group was 81, followed by the group (30-39) with 57 infections, 11.07%, and the age group for people older than 59 years was 24 infections at a rate of 4.93% of the total for two years, as shown in (**Table 2**).

Table 2. Age Distribution of the Study Sample

	Age group(year)	No.	%
2019	1-9	25	5.13
	10-19	21	4.31
	20-29	33	6.77
	30-39	25	5.13
	40-49	10	2.05
	50-59	10	2.05
	More than 59	10	2.05
2020	1-9	81	16.63
	10-19	54	11.09
	20-29	53	10.88
	30-39	57	11.70
	40-49	46	9.45
	50-59	38	7.8
	More than 59	24	4.93

Cutaneous Leishmaniasis is more common in children aged 5 to 14 and adults aged 15 to 45. These are the school and work age groups in Iraq for both sexes. They are more likely than other age groups to participate in outdoor activities and are exposed to sandflies-related environmental factors. Furthermore, infections with *L. tropica* result in the establishment of life-long immunity [15], which may contribute to a decreased prevalence in the elderly [16].

4. Conclusion

The study concludes that the Cutaneous Leishmaniasis disease affected by sex and age and it is with continuously increasing in Iraq.

References

1. Alvar, J.; Yactayo, S.; Bern, C. Leishmaniasis and poverty. *Trends Parasitol.*, **2006**, *22*, 12, 552-557.
2. Hotez, P.J.; Remme, J.H.; Buss, P.; Alleyne, G.; Morel, C.; Breman, J.G. Combating tropical infectious diseases: report of the Disease Control Priorities in Developing Countries Project. *Clin Infect Dis.* **2004**, *38*, 6, 871-8.
3. Hailu, A.; Dagne, D.A.; M. Boelaert. Leishmaniasis, in Neglected Tropical Diseases-Sub-Saharan Africa. **2016**, Springer, 87-112.
4. Inbar, E.; Hughitt, V.K.; Dillon, L.A.; Ghosh, K.; El-Sayed, N.M.; Sacks, D.L. The Transcriptome of *Leishmania major* Developmental Stages in Their Natural Sand Fly Vector. *mBio*, **2017**, *8*, 2, e00029-17.
5. Alvar, J.; Vélez, I.D.; Bern, C.; Herrero, M.; Desjeux, P.; Cano, J.; Jannin, J.; den Boer, M. WHO Leishmaniasis Control Team. Leishmaniasis worldwide and global estimates of its incidence. *PLoS One.* **2012**, *7*, 5, e35671.
6. Jacobson, R.L., Leishmaniasis in an era of conflict in the Middle East. *Vector-Borne Zoonotic Dis.*, **2011**, *11*, 3, 247-258.
7. AlSamarai, A.M. and H.S. AlObaidi, Cutaneous leishmaniasis in Iraq. *J. Infect. Develop. Count.*, **2009**, *3*, 02, 123-129.
8. Shahatha, S.S. and Saleh, T.A. An Epidemiological, Diagnostic, and Therapeutic Study of the *Leishmania tropica* Parasite in Iraq's Anbar Province. *Baghdad Sci. J.*, 2018. **15**(4).
9. Al-Mafraji, K.H.; Al-Rubaey, M.G.; Alkaisy, K.K. Clinico-Epidemiological Study of Cutaneous Leishmaniasis in Al-Yarmouk Teaching Hospital. *Irq. J. Commun. Med.*, **2008**, *21*, 3.
10. Sukkar, F. Some epidemiological information from annual report on kala azar in Iraq during 1974. *Bulletin Endemic Dis.*, **1976**, *17*, 1/4, 119-125.
11. Al-Alousi, T., Latif, B.; Al-Shenawi, F. Detection of antibodies to leishmaniasis in dried blood on filter paper by the indirect fluorescent antibody test. *Ann. Trop. Med. Parasitol.*, **1980**. *74*, 5, 503-506.
12. Al-Warid, H.S.; Al-Saqur, I.M.; Al-Tuwaijari, S.B.; Al-Zadawi, K.A.M. The distribution of cutaneous leishmaniasis in Iraq: demographic and climate aspects. *Asian Biomed.*, **2017**, *11*, 3, 255-260.
13. WHO, Control of Leishmaniasis. **2009**.
14. Roberts, C.W.; Walker, W.; Alexander, J. Sex-associated hormones and immunity to protozoan parasites. *Clin. Microbiol. Rev.*, **2001**, *14*, 3, 476-488.
15. Mendonça, S.C., Differences in immune responses against *Leishmania* induced by infection and by immunization with killed parasite antigen: implications for vaccine discovery. *Paras. Vect.*, **2016**, *9*, 1, 1-9.
16. Karami, M.; Doudi, M.; Setorki, M. Assessing epidemiology of cutaneous leishmaniasis in Isfahan, Iran. *J. Vector Borne Dis.*, **2013**. *50*,1, 30.