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Research Article

Some Epidemiological Aspects of Cutaneous Leishmaniasis in Kut city, Iraq

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Abstract: A total of 54 patient's sample with Cutaneous Leishmaniasis were collected from a period October 2013 to January 2014 in Kut city, Iraq. The patients were questioned and examined for the presence of ulcer or scar. The present investigation revealed that the highest number of patients 19 (26.4%) was in age group (10 and less) year. The female was predominance 36 (67%) and 33(61%) had wet lesions while 21(39%) had dry lesions. Our results showed that 23(43%) of CL patients were had single lesion and 31(57%) had multiple lesions, most of them 41 (57%) in arm. The highest incidence of disease 36(67%) was observed in rural areas, and the lowest incidence rate 18(33%) was in urban areas. The statistical analyses were carried out with Minitab version.
Keywords: Cutaneous Leishmaniasis, Human, Clinical signs

INTRODUCTION

Leishmaniasis , a vector - borne disease caused by obligate intra-macrophage protozoa , is characterized by diversity and complexity [1].There are more than 21 species causing human infection [2].

Leishmaniasis comprises a group of diseases caused by the genus *Leishmania* widely distributed in tropical and subtropical regions throughout the world. These diseases transmitted by various species of Phlebotomus sand fly in Old World. *Leishmania* genus can be divided into several species complexes [3]. It occurs in three clinical forms including cutaneous leishmaniasis (CL), mucocutaneous leishmaniasis (MCL), and visceral leishmaniasis (VL) [4, 5].

Cutaneous leishmaniasis is the most common form of leishmaniasis, with about 1.5 million new cases every year worldwide. The surveys demonstrate that cases of leishmaniasis are increasing worldwide, mainly due to environmental changes. Irregular buildings in towns and collection of domestic garbage in suburbs, plus migration of susceptible populations could also be causative factors. Poverty and malnutrition play important roles in increased morbidity of the disease [6].

Leishmania major, *L. tropica* and sometimes *L. infantum* are the causative agents of cutaneous leishmaniasis in Old World. Most of the cases of CL occur in Afghanistan, Algeria, Saudi Arabia, Brazil, Iran, Iraq, Syria, and Sudan [7]. In Iraq, two species are present: L tropica, the agent of anthroponotic cutaneous leishmaniasis (ACL), and *L. major*, the agent of zoonotic cutaneous leishmaniasis (ZCL). Both ACL and ZCL were reported as causative agents of leishmaniasis in Iraq, but ACL is found mainly in suburban areas [1].

Depending on the species causing the disease, different preventive measures are taken against leishmaniasis [8]. All *Leishmania* species have the same morphology; hence, they are not distinguishable microscopically [9]. The diagnosis of CL in Iraq is based on clinical signs of the disease and microscopic observation of parasites in stained skin biopsies [10]. Specific and sensitive molecular diagnostic tools been implemented and information about disease distribution, parasite life cycle and combining risk factors is confined [11]. The study aimed to assess the epidemiological and clinical aspects of the disease in Kut City.

MATERIALS AND METHODS

Collection of samples

This study was performed in the dermatology clinic of AL-Zahra'a and AL-Karamah Teaching Hospital in Kut city from October 2013 to the end of January 2014. A total of 54 cases of suspected cutaneous leishmaniasis were included in this study. These patients were complained from skin lesion in exposed part of the body mostly in the face, leg, arm and diagnosed clinically by special dermatologist as cutaneous leishmaniasis. These cases were confirmed as CL patients based on clinical symptoms and direct giemsa-stained smear. Patient's profiles including name, date of sampling, age, sex, habitation area, number of lesions, type of infection and location of the

lesions were collected for epidemiological analysis. None of the patients had received any anti-leishmanial chemotherapy treatment prior to examination.

Parasitological examination

The sample from the cutaneous lesion was taken by fine needle aspiration as the following steps :

- The skin around the lesion was disinfected.
- The sterile syringe of 1ml contained 0.2 ml of sterile normal saline was injected intradermaly through intact skin in to the active red border of the lesion.
- Aspirate the injected fluid as the needle draw back till the bloody stained fluid aspirate.
- Small amount of aspirated fluid was taken and smeared on a clean glass microscope slide then left it to dry, then fixed using 100% absolute methanol for 30 seconds and left it to dry again.
- Stained with Geimsa stain for 20 minutes, then rinse with tap water and dry the slide, and then examined it under oil immersion lens of the light microscope (Olympus CH2, Japan).
- Amastigote was diagnosed as round or spherical shape with distinctive kinetoplast. In this case was declared positive. When no amastigote was seen after 15 minute of inspection, the smears was declared negative [12].

Statistical Analysis

The suitable statistical method was used in order to analyze and assess the results by using T-test in Minitab version [13].The comparison of significant (P-value) in any test were: S= Significant difference ($P<0.05$), HS= Highly Significant difference ($P<0.01$), and NS= Non Significant difference ($P>0.05$).

RESULTS

Table 1 shown the prevalence of CL in according to the age,gender and residence. The higher infection 19/54 (35.2%) appeared in age group (10 and less). The infection was detected in both sexes with a predominance in females 36/54(67%) and most of cases from rural areas.

The types of CL infection in relation to the age and gender were appeared in table 2. The wet type was higher 33/54 (61%) than dry type 21/54 (39%).

The multiple of CL lesions was detected the highest 31/54 (57%) (table 3).

Table 4 shows the distribution of CL ulcers in three parts of patient. The higher 41/72 (57%) was appeared in arm than other parts of patient.

Table 1: Distribution of CL cases in relation of Age, Gender and Residence

Age (year)	Gender	Residence		Subtotal	Total
		Urban	Rural		
10 and less	M	2	7	9	
	F	0	10	10	19
11-20	M	2	1	3	
	F	2	5	7	10
21-30	M	2	0	2	
	F	4	5	9	11
31-40	M	1	1	2	
	F	2	4	6	8
41 and more	M	1	1	2	
	F	2	2	4	6
Total	M	8	10		
	F	10	26	54	
%	-	(18) 33%	(36) 67%	100%	

M = Male, F= female, T = - 4.31, P = 0.140

Table 2: Types of CL infection in according to the Age and Gender

Age (year)	Gender	Type of CL infection		Subtotal	Total
		Dry	Wet		
10 and less	M	4	5	9	
	F	3	7	10	19
11-20	M	1	2	3	
	F	4	3	7	10
21-30	M	1	1	2	
	F	1	8	9	11
31-40	M	1	1	2	
	F	4	2	6	8
41 and more	M	1	1	2	
	F	1	3	4	6
Total	M	8	10		
	F	13	23	54	
%	-	(21) 39%	(33) 61%	100%	

M = Male, F= female, T = - 3.38, P = 0.090

Table 3: Number of CL lesions in according to the Age and Gender

Age (year)	Gender	Number of CL Lesions		Subtotal	Total
		Single	Multiple		
10 and less	M	5	4	9	
	F	6	4	10	19
11-20	M	2	1	3	
	F	5	2	7	10
21-30	M	0	2	2	
	F	2	7	9	11
31-40	M	1	1	2	
	F	1	5	6	8
41 and more	M	0	2	2	
	F	1	3	4	6
Total	M	8	10		
	F	15	21	54	
%	-	(23) 43%	(31) 57%	100%	

M = Male, F=Female T = - 3.05, P = 0.190

Table 4: Distribution of CL Ulcer in different Age Groups

Age (year)	Site of CL ulcer			Total	Total %
	Face	Arm	Leg		
10 and less	4	12	3	19	26.4 %
11-20	2	6	3	1 1	15.3 %
21-30	4	10	4	18	25 %
31-40	1	7	5	13	18 %
41 and more	0	6	5	11	15.3 %
Total	11	41	20	72	100 %
%	15%	57%	28%	100 %	

T = - 7.228, P = 0.00016

DISCUSSION

Cutaneous leishmaniasis (CL) appears to be a major public health problem and endemic in Iraq, Kuwait, Iran, Afghanistan, and other places in the Middle East [14]. Diagnosis of CL is although clinically obvious to an experienced practitioner in an endemic area, confirmation can be done using various investigations [15]. In most CL-endemic countries, diagnosis is based mainly on clinical and epidemiological criteria. The presence of single or multiple nodular/ ulcerative skin lesions can be considered indicative of CL [16].

In the current study, the ulcers were observed among all age groups. The T- test showed statistical significant differences in the prevalence of the CL ulcers of all age groups (T= - 7.228, *P*= 0.0001) and site of ulcers. The T- test also showed non-statistical significant differences in the prevalence of the CL ulcers of all age groups (T= - 4.31,-3.38,- 3.05, *P*= 0.140,0.090,0.190) by sex, type of infection and number of lesions, respectively.

Age distribution of the disease through this city showed that 26.4 % of the patients are under the age of 10 years. The most likely reason is an increase in human- sandfly contact. This is attributed to the development of villages and the spread of the human population into the habitats of the local vectors.

There was a strong tendency for cases to be more prevalent, significantly more in females than in males ($P<0.05$), but there is no clear explanation for such a gender distribution. It might be due to behavioural and individual risk factors [17-19]. Also, the high prevalence of CL in females might be explained by the fact that females in this group are more exposed to insect bites than male patients in the same group because most farm workers were females in rural areas. This finding is consistent with those found by others but contrary to some [20-22].

Ulcerative wet type lesions were present in 61%, while the nodule dry type lesions were present in 39% .These observations are in agreement with those reported from Iraq [23], Iran [24], Colombia [25], Pakistan [26], and Afghanistan [27].

The present study indicated that the incidence rate of multiple lesions in CL patients was 57%. This result could be due to long periods of exposure to Plebotomine sand flies and the high population density of sand flies in this area. Regarding to distribution of CL lesions in this study, we found that the higher proportion of the lesions were located on the upper limbs (57%), and lower limbs (28%) face (15%). In comparison, the study by AL-Obaidi [28] found that CL lesions occurred mainly on upper limbs and lower limbs, less frequently on the face. Also, our results were similar to the results of other studies [29, 30].

CONCLUSIONS AND RECOMMENDATIONS

Elimination of the CL disease is still a challenge for the international health community. Policy should be formulated to control leishmaniasis in the direction of to eliminate the vectors. Extensive research in epidemiology of leishmaniasis should also be conducted in non endemic areas too.

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