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## Clinico-epidemiological Study of Cutaneous Leishmaniasis in a Sample of Iraqi Armed Forces

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### Abstract:

**Objective:** To determine some of the clinico-epidemiological aspects of cutaneous leishmaniasis in Iraqi armed forces.

**Methods:** This study consists of two parts; the first part consists of a retrospective analysis for the recorded cases in the military achieves during the war with Iran (1982-1988) and postwar period (1989-1998). The second part which carried out during the period from July 1999 to April 2000 in Al-Rasheed Hospital/ Department of dermatology on all cases referred to this hospital from all military units in Iraq.

**Results:** A total of 100 cases of cutaneous leishmaniasis were examined, of these 23 were of wet type and 77 of dry type. Analysis of the results showed that most of the cases (73%) were reported from the middle sector of Iraq. The highest percentage of affected persons (54%) was between 18-25 years old. The most common site of infection was the lower limb (58%), the second was the upper limb (24%), and 18% in the head and neck. The use of pentostam locally and rifampicin showed healing within 1-3 months in 65.3% of cases.

**Key Word:** Cutaneous leishmaniasis

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### Introduction:

Leishmaniasis are the major protozoal disease in tropical countries, caused by several pathogenic species of the genus *Leishmania*, of the family *Trypanosomatidae* [1]. The causative agents are transmitted to man by female phlebotomus sand flies in which the flagellate forms of leishmania (promastigote) are developed and propagated [2].

An estimated 350 million people worldwide live in areas where there is a risk of infection. The incidence of cutaneous leishmaniasis (CL) is estimated to be 1.0-1.5 million cases a year, and poses a substantial risk for settlers, residents, military personnel and expatriates working or traveling in endemic areas [3].

CL is endemic in Iraq and neighbouring countries such as Iran, Syria, Saudi Arabia, and Turkey [4].

The aim of the current study is to determine the clinico-epidemiological aspects of CL in Iraqi armed forces.

### Patients & Methods:

The first part of the study consists of a retrospective analysis for the recorded cases in the military achieves during the war with Iran (1982-1988), and postwar period (1989-1998). The second part which is carried out during the period from July 1999 to April 2000 in Al-Rasheed Hospital/ Department of Dermatology, on all cases referred to this hospital from all military units in Iraq. The procedure includes;

**A-**Interview with each patient to fill the questionnaire by the investigator, patients were asked about their present complaints.

**B-**Clinical examination was undertaken which included the following steps:

1-Direct superficial inspection of the cutaneous lesion, measuring its size, recording its number, exact site, clinical superficial classification as wet or dry CL, duration of the lesion presented, and the features of the disease also was studied.

2-Direct microscopic examination: This part of the study was carried out with the help of the hematologist physician of Al-Rasheed Hospital\ Al-Rasheed Laboratory.

3-Culture: NNN type medium was used for culturing the parasite (diaphasic).

4-Histopathology: Pieces of 1x1 cm each were taken from patients with wet CL by a sharp, sterile knife; the pieces were preserved in formalin in screw-capped tube. They were histopathological examined by the histopathologist in Al-Rasheed Laboratory.

5-Treatment: Two main types of treatment were used, these includes;

**A-** Local treatment, using either pentostam (sodium stibogluconate) in dose of 1 c.c. + 0.1 c.c. xylocaine given by intralesional injection, and this was repeated in second and third dose at interval of 10-14 days till the active lesion subsides, or topical application of antibiotics mainly for those cases with complications to shorten the duration for healing.

**B-** Systemic treatment using of Rifampicin (1200 mg) daily adult dose given orally in two divided doses, the duration of treatment was 2-8 weeks.

### Results:

Retrospective analysis of the records for the two periods (1982-1988) and (1989-1998) is shown in table 1 and table 2 respectively.

**Table1: The number of CL cases reported from all fronts during the period 1982-1988 (The war period).**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1982	31	10	1	1	1	1	1	-	-	9	11	37	99
1983	81	23	10	8	4	-	1	-	-	4	20	46	196
1984	169	76	33	23	18	15	1	-	9	17	36	148	549
1985	295	146	79	32	19	20	17	6	18	26	52	162	872
1986	315	92	64	17	14	14	15	14	5	20	41	132	743
1987	125	97	68	18	13	5	21	13	22	81	94	173	730
1988	241	130	85	25	15	2	7	4	13	24	92	201	839
<b>Total</b>	1257	574	340	129	84	57	60	37	67	178	346	889	4028
<b>Mean</b>	179.5	82	48.5	18.4	12.0	9.5	15.0	9.25	13.4	25.4	99.4	128.4	575.4

**Table 2: The number of CL cases reported from all fronts during the period 1989-1998 (The post war period).**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1989	20	5	1	-	-	-	-	-	5	11	18	80	150
1990	26	8	2	1	-	-	-	-	8	14	25	35	119
1991	11	7	4	*	-	-	-	-	*	*	15	11	43
1992	11	5	2	*	-	-	-	-	*	4	9	12	42
1993	5	1	*	*	-	-	-	-	*	1	2	9	18
1994	7	*	*	*	-	-	-	-	*	*	3	6	16
1995	5	*	*	*	-	-	-	-	*	3	4	7	19
1996	2	1	-	-	-	-	-	-	*	4	5	6	18
1997	4	1	-	-	-	-	-	-	*	2	4	10	21
1998	5	1	1	-	-	-	-	-	*	1	3	9	20
<b>Total</b>	96	29	10	1	-	-	-	-	13	40	88	185	466
<b>Mean</b>	9.6	2.9	*	*	-	-	-	-	*	*	8.8	18.5	46.6

\*Data not available      -No cases were reported

For the second part of the study; for the period from July 1999-April 2000; a total of one hundred patients with CL were examined in Al-Rasheed Hospital\ Department of Dermatology. It was found that out of the one hundred cases of CL that had been studied, 23 cases were presented as the wet form (early ulcerative) in comparison to 77 cases to the dry form (late ulcerative). The distribution of cases of wet and dry CL according to months for the period 1999 – 2000 is shown in (Table 3).It was found that most of the cases were reported in

the period from September to February ( reached their peak in December & January ) .

Table 4 shows the geographical distribution of cases according to the fronts, as demonstrated in the table, the central sector showed the highest number of cases (65.21% of the total wet type and 75.3% of the total dry type).

The current study shows that the majority of wet CL was from rural area (91.3%) while 8.69% were from urban area.

**Table 3: The cases of wet and dry CL according to months for the period 1999-2000.**

Months	Wet CL	Dry CL	Total	
			No	%
June	-	-	-	-
July	-	-	-	-
August	-	-	-	-
September	1	6	7	7
October	3	8	11	11
November	6	12	18	18
December	9	17	26	26
January	2	28	30	30
February	1	3	4	4
March	-	1	1	1
April	1	2	3	3
May	-	-	-	-
<b>Total</b>	23	77	100	100%

**Table 4: The geographical distribution of the cases for the period (1999-2000) according to the fronts.**

Sector	Wet CL		Dry CL	
	No	%	No	%
North (Mousl, Duhok & Karkook Provinces)	2	8.69	5	6.5
South (Basrah & Missan Provinces)	3	13.05	7	9.1
Middle (Baghdad, Kut, Dyalah, Najaf & Karbala Provinces)	15	65.21	58	75.3
Mobile (personnel whose job required movement in different sectors according to the needs)	3	13.05	7	9.1
<b>Total</b>	23	100%	77	100%

Table 5 shows the infection with CL (wet and dry) according to age. The mean age was  $24.3 \pm 5.5$  years for wet CL and  $27.0 \pm 8.6$  years for dry CL. The highest percentage (54%) of affected persons was among the 18-25 years old age group.

The most common area of the lesions was the lower limb (58%), upper limb 24%), head and neck (18%), and no lesion was found on the trunk, palms, or soles.

Majority of cases with wet CL (86.96%) was reported to physician 1-2 months after onset, 47.9% of them showed complete recovery within 2-3 months, 52.1% lasted more than 3 months due to some complications. The number and size of the lesions of wet and dry CL per individual in the hundred cases recorded during the period 1999-2000 is shown in table 6 and table 7 respectively.

**Table 5: The infection with CL according to age for the period 1999-2000.**

Age group (years)	Wet CL	Dry CL	Total	
			No	%
18-25	15	39	54	54
26-33	6	24	30	30
34-41	1	10	11	11
>41	1	4	5	5
<b>Total</b>	23	77	100	100%

**Table 6: The number of lesions of wet and dry CL per individual in 100 cases recorded during the period 1999-2000.**

No. of lesions	Wet CL		Dry CL	
	No	%	No	%
1	13	56.52	24	31.1
2	2	8.7	12	15.6
3	5	21.7	9	11.7
4	1	4.34	6	7.8
5	1	4.34	6	7.8
6	-	-	3	3.9
7	9	9	4	5.2
8	-	-	8	10.4
9	1	4.34	3	3.9
>9	-	-	2*	2.6

\*No. of lesions was 14

**Table 7: The size of the 50 lesions wet CL and the 294 lesions dry CL in 100 cases.**

Size of lesion (cm x cm)	Wet CL		Dry CL	
	No	%	No	%
<1	9	18	96	32.7
1-2	32	64	132	44.9
3-4	6	12	52	17.7
5-6	1	2	12	4.1
7-8	1	2	-	-
9-10	1	2	2	0.6
<b>Total</b>	50	100%	294	100%

Examination of the slides by direct smear and cultures of wet CL for the studied cases reveals the presence of amastigote in 69.5% of the direct smear, while the promastigote was positive in the artificial culture media (NNN) in 65.2% of cases.

The types and methods of treatment used for the studied wet CL for the period 1999-2000 according to the duration of cure is shown in table 8.

**Table 8: The types and methods of treatment used for the studied wet CL for the period 1999-2000 according to the duration of cure.**

	Type of treatment	No. of cases	Method of treatment	Duration of treatment "cured" (months)
1-	Pentostam	7	Local injection	1-2
2-	Pentostam & Antibiotics	3	Local injection Systemic	2-3
3-	Rifampicin & Antibiotics	3	Systemic Local	2-3
4-	Rifampicin	2	Systemic	1-2

#### Discussion:

The name little sister made Iraq a classical home of CL.

There is little liable data on the disease among armed forces. In 1982 and then after, the armed forces experienced heavy infections among the personnel, all along the eastern region during the war period with Iran (1982-1988). The wet form of the disease was not recorded previously in Iraq<sup>[5-7]</sup>. There was much crossing and re-crossing of armed forces over the international borders with Iran and because this form of the disease was common in western Iran, it may be speculated that the disease started to cross the borders with the soldiers or the wild gerbils (the reservoir of the disease) of the area.

Thus this outbreak occurred in 1982 and continued to be common until 1988 among the armed forces. When the war was over and the troops were withdrawn back to the interior of the country to their previous permanent stations, the cases were greatly diminished.

The current study showed that most of the cases were reported in the period from September 1999 to February 2000. These findings more or less agree with other workers in Iraq<sup>[8-9]</sup> and elsewhere<sup>[10]</sup>.

Regarding the age, the results of this study showed that the mean age was 24.3+5.5 years for the wet type and 27.5+8.6 years for the dry type which coincides with the findings of other workers on the military forces in Iraq<sup>[11]</sup>.

The sites of predilection of the lesions of cases were mostly on the exposed areas as they were easily bitten by vectors. In the current study, the lower limb was the first site for wet CL (58%), the second was the upper limb, and then the face, which agrees with the results reported by Rafid, where the lower limb, upper limb, then the head and neck were, affected respectively<sup>[12]</sup>.

The laboratory examination of wet CL shows 69.5% positive smear and 65.2% positive culture, which were still the most accurate ways in detection of leishmaniasis in suspected lesions<sup>[13]</sup>. As a negative microscopic examination does not exclude the disease, such cutaneous infection in endemic areas may be diagnosed on the basis of their clinical features as leishmaniasis<sup>[14]</sup>.

Regarding the treatment, this study showed that most of the cases with wet CL improved within 1-3 months (87%). It was found that using pentostam (locally) in wet CL is very effective. It is evident that clean cases improved within 1-2 months (60.8%), while complicated cases (secondary infection using pentostam with systemic antibiotics), improved within 2-3 months, as infection will prolong the period of recovery, this response was equal in case of wet CL treated with rifampicin systemically and local antibiotics, also improved in 2-3 months in 13.04%, but rifampicin alone, orally, showed improvement in 1-2 months in 8.7% of cases. In general the effect of anti-leishmanial drugs is more often an alteration of the

host-parasite relationship rather than the toxic effect on the parasite itself<sup>[15]</sup>.

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