

## PREVALENCE OF CUTANEOUS LEISHMANIASIS AMONG REFUGEE CAMPS IN SALAHDEEN PROVINCE, IRAQ

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### ABSTRACT

Leishmaniasis, a vector-borne protozoan parasitic diseases endemic to 88 countries worldwide and is a source of significant public health concern. The aim of the study was to paid attention to the high prevalence of cutaneous leishmaniasis (CL) between refugee in Salahuddin province's camps after the beginning of the civil war in Iraq in 2014. Since January to March 2015, records for cases of cutaneous leishmaniasis (CL) were collected from the United Nations Refugee Agency (UNHCR) in Iraq from three camps in Salahuddin province (Tal-Alsebat, Al-Shhama and Dream city). A total of 333 cases diagnosed with (CL) based on the clinical manifestations and traditional microscopic examination. Positive cases were evaluated in terms of residence, age and gender, lesion's location, presence of single or multiple lesions, number of individual within the family, and outcome, as well as the socioeconomic and environmental state. The high rate of infection was in Tal-Alsebat camp (63.9%). Most patients (73.6%) were <10 years of age. No significant differences between male and female. Lesions are more frequently observed on the face, neck and hands (66%).

**Key words:** cutaneous leishmaniasis, refugees, Iraq.

### INTRODUCTION

Leishmania is the most important protozoan infection in the Middle East region (WHO, 2012). There are three important forms of leishmaniasis (cutaneous, mucocutaneous, and visceral) that are transmitted by sandfly (Herwaldt, 1999). *Leishmania tropica* is a parasite of cutaneous leishmaniasis (CL) in central Asia, and Middle East, including Iraq (Postigo, 2010).

Several risk factors play an important role in increased frequency of infection, environmental variations and habits of societies (Khan and Muneeb, 2005), but the most significant are those associated with wars, population clustering and moving and migration of susceptible populations, resulting in the exposure of unimmunized individuals to the parasite (Douba *et al.*, 1997).

Among the different regions in Iraq, Salahuddin is known to have high prevalence of CL (Al-Warid *et al.*, 2017). After 2014 events in this province and

because of a different war-related factors, new outbreaks have been reported, especially in the refugees' camps. In this study, we assessed the current leishmaniasis situation between refugees in three camps in Salahuddin province.

### MATERIALS AND METHODS

Records from the United Nations Refugee Agency (UNHCR) were reviewed for cases of leishmaniasis from three camps (Tal-Alsebat, Al-Shhama and Dream city) in Salahuddin province reported between January to March 2015. All cases reported were reviewed in terms of age, gender, clinical presentation, presence of single or multiple lesions and number of individual within the family, treatment, and outcome, as well as the socioeconomic and environmental state were collected at the refugee camps. In addition to clinical manifestations, microscopic confirmation was obtained by taking smears of skin lesion, air dried, fixed with methanol, and stained with Giemsa stain, figure (1) (Schnur and Jacobson 1987).

### RESULTS

Most infection cases were in Tal-Alsebat camp 63.9% while in Al-Shhama and Dream city camps

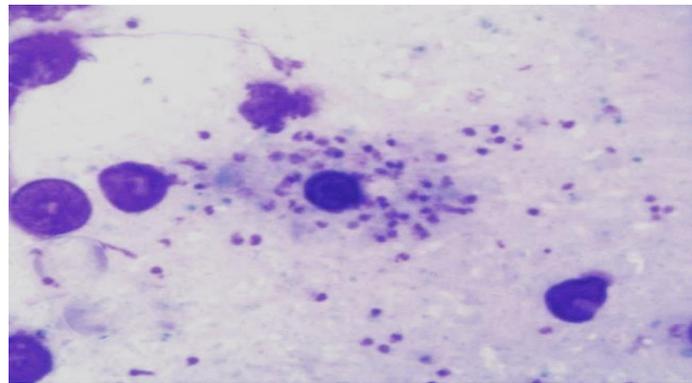
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were 31.2% and 4.8% respectively. 73.6% patients were <10 years of age. Each family comprised (3–15) members, and the percentage of family members infected ranged from 12% to 94.6%. No

significant differences between male and female. Lesions are more frequently observed on the face neck and hands 66%. (Table 1)

**Table 1:** Distribution of Leishmania cases according to some infection characteristics.

	Number of cases	Percentage %	
<b>Age group</b>			
1-10	245	73.6	<b>P value= 0.003</b>
11-20	81	24.3	
21-30	5	1.5	
31<	2	0.6	
<b>Gender</b>			
male	149	44.7	<b>P value= 0.209</b>
female	184	55.3	
<b>Cite of ulcer</b>			
Face, neck and upper limbs	220	66	<b>P value= 0.04</b>
Lower limbs	113	34	
<b>Total</b>	<b>333</b>		



**Figure 1:** *Leishmania tropica*, amastigote stained with Giemsa stain 100X



**Figure 2:** Iraqi refugees in temporary, unhygienic, which are breeding lands for disease and different vectors, Salahuddin province, Iraq, 2015.



**Figure 3:** Patterns of leishmaniasis among Iraqi refugees in Salahuddin province camps, 2015. (A) Lesions disfiguring the face. (B) lesions on the foot.

## DISCUSSION

In recent years, results of many researches have begun to identify the impacts of wars and conflict on global health outcomes and infectious diseases appearance (Desjeux, 2001; Kerridge *et al.*, 2012). Vector borne diseases, such as leishmaniasis may be propagated in many regions as a result of various social and healthcare system failures, including: movement of population, shortage in health programs, neglect in medical care, and the demolition of health-related substructure (Iqbal, 2006; Kerridge *et al.*, 2012).

There are many factors that play critical roles in the incidence of CL in different parts of Salahuddin province after 2014 events particularly, in refugee camps. Those camps had mainly provisional houses of tents, equipped with inadequate sanitation, waste disposal, and insulation (figure 2). Such conditions are ideal for vectors of *Leishmania tropica* (Killick-Kendrick *et al.*, 1995) and significant in propagating disease within human populations. Crowding, destitution, stress, malnutrition and weakened immunity are all risk factors for CL (Beyrer *et al.*, 2007). The small rodents and dogs are the reservoir hosts for *Leishmania* (Murray, 2005), which are out of control in those camps. This record agreed with the outbreaks in refugee camps in many countries as in Kabul, Afghanistan (Rowland *et al.*, 1999, Reithinger *et al.*, 2010) and in Syria (Maya *et al.*, 2014).

Result, according the age distribution of those infected with *Leishmania*, has been inclined towards the younger age groups with a significant difference and this result agreed with (Rahi, 2011). There were no significant differences between male and female, both sex lived in the same place and have the same

opportunity to expose to sandfly-associated environmental conditions (Kumar *et al.*, 2007).

The face, neck and upper limbs were the higher parts of lesions localized in infected individual especially in children (66%) and lower limbs (34%) figure (3). This could be correlated with the feeding hours of sand fly, which is more active at the time when young children are sleeping and these body parts are more exposed to vector feeding (Romero *et al.*, 2010).

## CONFLICT OF INTEREST

The authors declare no conflicts of interest and no affiliation with companies or institutions that could benefit from this study.

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### انتشار داء اللشمانيا الجلدية بين مخيمات اللاجئين في محافظة صلاح الدين / العراق

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داء اللشمانيا من الامراض التي تسببها الاوالي الطفيلية والتي تنقل بواسطة ناقل مفصلي ، حيث يستوطن في ٨٨ دولة حول العالم ويحظى بأهتمام منظمات الصحة العالمي. تهدف الدراسة الحالية بتسليط الضوء على الانتشار العالي لداء اللشمانيا الجلدية بين اللاجئين في المخيمات في محافظة صلاح الدين والذي اقيمت بعد الهجمات الارهابية في العراق في عام ٢٠١٤ .

منذ شهر كانون الثاني ولغاية شهر اذار ٢٠١٥ ، جمعت تسجيلات موثقة من جمعية المم المتحدة لشؤون اللاجئين في العراق لحالات اصابة بداء اللشمانيا الجلدية في ثلاثة مخيمات للاجئين ( تل السبياط ، الشهامة ودريم ستي). تم جمع ٣٣٣ عينة من اشخاص يشتبه باصابتهم بداء اللشمانيا الجلدية حيث اجريت الفحوص المختبرية للتأكد من الاصابة. معلومات تتعلق بالعمر ، الجنس ، موقع وعدد التقرحات ، عدد افراد الاسرة بالاضافة الى الوضع الاقتصادي والاجتماعي والظروف البيئية ، قد تم تسجيلها للحالات المصابة بالطفيلي. معظم حالات الاصابة كانت في مخيم تل السبياط وبنسبة (63.9%). اعلى حالات الاصابة بين المصابين الذين كانت اعمارهم دون العاشرة من العمر (73.6%). لم تظهر النتائج اختلاف معنوي في الاصابة بين الذكور والاناث. كان الوجه والرقبة والايدي اكثر مناطق الجسم عرضة للأصابة (66%) .

**الكلمات المفتاحية :** اللشمانيا الجلدية ، اللاجئين ، العراق