



Prejudice to the Environmental Balance Exacerbate the Outbreak of Zoonotic Cutaneous Leishmaniasis after the War against Daesh in - Al-Ramadi, Al-anbar Governorate

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Abstract

Pollution resultant from military operations after the war against Daesh that happened in Ramadi city have direct or indirect significant impact, on contaminated of environmental elements which start to exacerbation the outbreaks of zoonotic Leishmaniasis. In view of the fact that is one of the interpretations of the negative consequences on society, combined with bad personal hygiene. The distribution of CL has explicit affected by demographic characteristics as well as climatic changes. Age group, type of construction, seems to have significant effect on morbidity with parasite. Incidence fluctuated according to degree of temperature during seasonal period a cutaneous leishmaniasis lesion observed in many parts of body's patients. However, a difference in the percentage of skin infestations was note, including face, hand, and arm and leg. Actually, the exact health situation in area's study is more complex and cannot be given based on a restricted data.

Keywords: Zoonotic; Prejudice; Leishmaniasis; Daesh; Cutaneous leishmaniasis; Environmental; Ramadi; War; Iraq

Introduction

Not only in third world countries but also worldwide, the problem of environmental pollution has become one of the most serious problems facing a human. Seriously get when decomposes nature's elements that have been in an unnatural way. Iraq suffers for many years from major disasters, thus demonstrated the complexity of development a wide variety of negative effects, problems and several diseases, such Leishmaniasis. It is zoonosis Protozoa disease [1,2], transmitted from reservoir hosts via bite of adult sand fly and perhaps affected Some 70 animal species, including man where living in the vicinity [3,4]. However, Leishmaniasis is classified as; a neglected tropical disease NTD [5]. Cutaneous form (CL) is the most common, caused by *Leishmania tropica* and *L. major*; globally distribution [6]. Cases of this disease in US service personnel have follow military activities in Iraq and Afghanistan [7]. In Iraq WHO, revealed 2978 and 2486 infected cases during 2011 and 2012, respectively. Like other cities of Iraq Ramadi, the capital of Anbar governorate entered the war against Daesh, resultant destruction at all levels, and tens of reports about

complexity environmental issues. From this point, the objectives of our study were to assay the prevalence of Leishmaniasis in the Ramadi city resultant from created conditions associated with increased environmental pollution after war.

Materials and Methods

In Arabic: (رَمَادِي) Ar-Ramādī; also formerly rendered as Rumadiyah or Rumadiya), representing almost one-third of the size of Iraq, about 110kilometers west of Baghdad. It is the capital and the largest city of "Al Anbar" Province. The city is one of the most famous cities in Iraq, gained significant prosperity due to strategic location on the Euphrates and the road west into "Syria and Jordan"[8,9]. A desert climate have most rain falls in the winter [10]. The average annual temperature in Ramadi is 22.4 °C (72.3 °F). This city has been fought extend several times, during the two world wars and again during military campaign (2015-2016) against Daesh which led to escape of thousands of Iraqis from the city of Ramadi [8,9,11]. The study done in cooperation with information

system / Anbar Health Directorate, were a questionnaire applied on randomly selected data from population who lives in refugee camps or returned to their houses destroyed during the fighting. Concerning sanitations level and affairs of families with respects of

medical services that coverage the study area as shown in the Table 1. Statistical analysis was used for analyzed data was evaluated by SPSS version 14.0. The significance calculated at the level $p < 0.05$.

Table 1: Show the Items of the Questionnaire Used in the Present Study.

Medical conditions		No. (%)
Prevention measures	Yes	
	No	
Are there any previous infection?	Yes	
	No	
Have previous infection been covered by any preventive measures (spraying, fogging, fuming of rodent)	Yes	
	No	
Are there animals in the house?	Yes	
	No	
Are there rodents at home?	Yes	
	No	
Are there rodents around the home?	Yes	
	No	
Have rodents been caught?	Yes	
	No	
Have been investigation of insect in patient's house or area?	Yes	
	No	
Is the infection locally or imported?	Yes	
	No	
Have ever sprayed the house?	Yes	
What kind: (partial or complete	No	
Is the home close to animal barn?	Yes	
	No	
Is the region covered by the distribution of mosquito nets?	Yes	
	No	
Are the poultry fields close to patient's house	Yes	
	No	
Are there residues in place of breeding insect and rodents? Building rubble, garbage piles, etc	Yes	
	No	
Is there waterway?	Yes	
	No	
What type of diagnosis? Clinical Laboratory		
Is the treatment topical or Systemic		

Results

Irrespective of the tested conditions, the average of the calculation was found by (205) infected cases. This value varied slightly with regard to the gender variable, included male (52.68%) compared to females (47.32%) but no significant value $P > 0.05$. Whereas significantly differences observed according to age group,

the highest percentage of parasite positive (31.71%) at age group ranged from 19-25 years and the lowest percentage in less than one year and (1-7) years (0.98%) and (3.41%) respectively. The highest percentage among housewife (34.63%) and less percentage among teacher (5.37%) for occupations mentioned above respectively, other has gradually from free work to students, then finally children (Table 2).

Table 2: Shows the demographical features of infected cases.

Demographical features	No. of infected cases (%)
Sex	
Male patients	108 (52.68)
Females patients	97 (47.32)
Total patients	205 (100)
Male/female ratio	
Patient's age groups	
less than 1 year	2 (0.98)
7-Jan	7 (3.41)
7-13	33 (16.09)
13- 19	61 (29.76)
19-25	65 (31.71)
25 ≥ years	37 (18.05)
Total	205 (100)
The occupation of patients	
Housewife	71 (34.63)
Children	20 (9.76)
Students	35 (17.07)
Teacher	11 (5.37)
Free work	68 (33.17)
Total	205 (100)

Concerning areas and residency, type of construction, seems to have significant effect on morbidity with parasite. Therefore, data obtained showed that people who lived in Brick and mud

or destruction houses were associated with highest morbidity (56.59%), while in Tent (43.41%) (Table 3).

Table 3: Shows type of construction of infected house.

House	Frequency (%)
Tent	89 (43.41)
Brick and other	116 (56.59)
Total	205 (100)

Table 4: Shows percentage of monthly morbidity of cutaneous leishmaniasis.

Month/year	Infection rate (%)
Apr-16	5 (2.44)
May	7 (3.41)
June	7 (3.41)
July	6 (2.92)
August	9 (4.39)
September	15 (6.67)
October	18 (8.78)
November	25 (12.19)
December	25(12.19)
Jan-17	15(6.67)
February	18(8.78)
March	20 (9.75)
April	20 (9.75)
May	20 (9.75)
Total	205 (100)

Incidence of CL fluctuated according to degree of temperature during seasonal period and from day to night to obtain the data on study sample. It appeared significantly affect $P > 0.05$ in November and December (12.19%) both for each, compared to April, July 2016 and their percentage (2.44%) and (2.92%) respectively. Moreover, irrespective of tested temperature, there was a significant increase in the percentage of morbidity due to environmental pollution, during the first months of 2017, March, April and May (9.75%) for each as compared with percentage recorded during 2016 (Table 4).

Table 5: The site of skin sore according to sex patients.

Sex	The site of skin lesion	Frequency (%)
Females 97	Face	43 (20.98)
	Hand	21 (10.24)
	Both leg	20 (9.76)
Males 108	Face	46 (22.44)
	Hand	31 (15.12)
	Arm	14 (6.83)
Total 205	Right leg	30 (14.63)
		205 (100)

Table 6: The number of skin sores in patients according to sex.

Site of infection	No. of boil
Female	
Face	2-Jan
Hand	1
Both leg	2
Males	
Face	3
Hand	1
Arm	2
Right leg	3-Jan

A cutaneous leishmania sislesion observed in many parts of body's patients. However, a difference in the percentage of skin infestations noted, including face, hand, and arm and leg (Table 5). The skin lesion appeared high at face for females (1-2) and males at face and right leg 3 and 1-3 respectively compared to other site of body (Table 6). There was a significant correlation between the numbers of skin abrasions and present dead or alive parasite at the site of infection.

Discussion

Answers all items of questionnaire as shown in Table 1, leave negative impression, at the time of preparation the present study. As resultant from military operations after the War against Daesh, either direct or indirect have a significant impact for leaving population suffered from unsuitable housing, poorest sanitation and nutrition, in addition to environmental pollution, which led to prejudice of the natural ecological balance and exacerbates the outbreaks of Leishmaniasis. Globally further than five million persons deadly each year because varies diseases or events related to environmental pollution [12]. Studies done in Iraq during 2004 until 2008 demonstrated that 1,655 and 1,711 individuals have

infected with CL and VL respectively. It was < 1 per ten thousand among these infected cases found in A-Anbar province. 217 cases were diagnosed with L. during the first three months of 2014 [13-15].

Concerning the infected persons, the actual number fails to report fully, it may significantly higher than were recorded. Knowing there are many infections not disclosed for several reasons. The review of literature identifies only 20% recorded. Males outnumbered females 108(52.68%) vs. 97(47.32%). the male sex more susceptible to infection than female because more exposed to the vector than female; perhaps linked with socio-economic status [16]. These results agree with [17] have suggested that women have lower exposure to parasite 7(38.89%) compared to men 11(61.11%). Similarly, previous work has demonstrated that CL infections were more prone to develop in males because of more social activity and interaction with internally displaced persons, whereas females always remain covered because Islamic rules and thus are less prone to sand fly bites [16]. Moreover, higher percentage of infection (31.71%) at age group 20-27 years. However, data obtained have demonstrated that age groups were independent factor associated with positive parasitic infection. Young are more susceptible to the infection than adult is. Previous work has noted least 70% of infected cases were children, aged 0-18 years [13]. In Mediterranean 1-4 years more susceptible, in china from 4-10 years, in India adult 20-26 years is corresponding to our study. Studies on epidemiology of CL outbreak in war-affected Waziristan areas, showed youths (1-15 of age) were more susceptible [18]. Regardless of the occupation, our results showed homemaker and free work were higher percentages of exposure to the parasite (34.63%) and (33.17%) respectively. With respect (Table 4) results, showed the number of CL were the higher (12.19%) during November and December, these results interpret; abundant cases of disease In Iraq be found in November, December and January after incubation period. Elsewhere the report of WHO, were revealed that the ZCL in Iraq between December and March. Anyhow epidemiological scheme varies in various from region of the world. Shed light on role of temperature, highest infection occurs at low temperature. The Warm and moderate weather; improve the opportunities to raise give new cases of disease, in both agricultural area, and cities indoors [3] and outdoors [19]. A variable results demonstration great impact of ecological, physiological and behavioral factors on the incidence.

At that time after the war against Daesh, the bettering control measurement and surveillance act as great challenge for repairing and rehabilitation infrastructure [14]. Regarding skin lesion, the highest number laid on the face for both sexes. While previous work recorded, greatest case lesions based particularly at the limbs, in addition to faces and even mucosa [17]. These differences due to influence of the host, were the insect bite the exposed parts of the body. A study done by [18] showed that 11 of 18 patients had only one lesion, mostly on the face.

Conclusion

War directly related on the disrupting of basic infrastructure. The disease is capable of linked with natural ecological system

imbalance, synergistic with bad personal environmental hygiene. Actually, the exact health situation in area's study is more complex and cannot give based on a restricted data. To stay the complex relationship between life and non-life within the ecosystem is stable as a way for perfect balance of the universe. CL more prevalent in study area and new cases are increasing day-by-day resultant from both disease and environmental pollution.

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