

Epidemiologic study of cutaneous leishmaniasis in Khorramshahr, Iran: 2008-2016

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Abstract

Introduction: Cutaneous leishmaniasis (CL) is one of the endemic and neglected diseases known to exist in the world, including in Iran. Therefore the aim of this study was to determine some epidemiological aspects of this disease in Khorramshahr, one of the cities with a high incidence of CL.

Material and Methods: This is a retrospective descriptive-analytical study, which has been performed by examination of Cutaneous Leishmaniasis cases in Khorramshahr during the 9-year period of 2008 to 2016. Further data were gathered using a questionnaire and eventually data analysis was done by SPSS.22.

Results: The number of patients with cutaneous leishmaniasis was 735. According to the population of Khorramshahr, the prevalence of the disease in the studied years was 42 per 100,000 people. 61.6% of the cases were male. Most cases were in children under the age of 10, and in people over the age of 30 years. The highest incidence was reported in December. It was also found that most cases of disease occur in urban areas (68%).

Conclusion: It seems that in the study region, Cutaneous Leishmaniasis is mostly the disease of urban areas; and, since most cases were observed in men, education courses should be planned, focused on men, to prevent the outbreak of the disease in urban areas.

Key words: cutaneous leishmaniasis, Khorramshahr, Iran

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Introduction

Cutaneous Leishmaniasis is an infectious disease mainly in tropical regions with Global expansion and is transmitted from the bite of *Phlebotomus* mosquitoes to humans. This is one of the six important diseases of the tropical regions induced mainly by two types of *Leishmania* parasites, i.e., *Leishmania Tropica* and *Leishmania Major* (1-3). It is estimated that there are about 12 million patients with *Leishmania* around the world, which increases every year by 2 million, and 1.5 million of whom have Cutaneous Leishmaniasis (4). Although endemic Cutaneous Leishmaniasis exists in 88 countries around the world, 90% of the cases are residents of the seven countries of Afghanistan, Algeria, Brazil, Iran, Peru, Saudi Arabia and Syria (5, 6). In recent years, Cutaneous Leishmaniasis has been regarded as one of the socially worrying diseases in war-ridden countries like Afghanistan.

Cutaneous Leishmaniasis is still a significant parasitic disease and a health problem in Iran. Prevalence of the disease has been reported to be between 1.8% and 37.9%; and is higher in some provinces, like Isfahan, Fars, Khorasan, Khouzestan and Kerman, than others. Although about 20,000 new cases of the disease are reported in Iran annually, it is believed that the real number is about 4-5 times higher. The report of new infection foci in recent years shows the potential for the spread of disease in Iran (5, 7-9).

Since Khorramshahr is a highly infected town in Khuzestan Province, in terms of Cutaneous Leishmaniasis this study aims at investigation the prevalence, emergence and some epidemiological aspects of the disease in the last 9 years.

Materials and Methods

This is a retrospective descriptive-analytical study, which has been performed by examination of Cutaneous Leishmaniasis cases in Khorramshahr during the 9-year period of 2008 to 2016. Khorramshahr has a population of 170,976, and is located in the south west of Iran.

In this study, the information of patients was gathered by reference to the Health Clinic on Khorramshahr Town by a zoonotic disease expert. All subjects of the study are Cutaneous Leishmaniasis patients, identified by the protocol of the Ministry of Health and were under treatment.

Data required, including age, gender, address, success or failure of treatment, number and position of ulcers, etc., were gathered by a questionnaire and then analyzed by SPSS. 22 software. In statistical analysis, use was made of descriptive statistics to gather primary information like frequency, frequency percentage, mean, maximum and minimum, data number and standard deviation. In inferential statistics, Kolmogorov-Smirnov test was used to gain information on the normality of the variables, and chi-square, Spearman and Eta tests were used for further analyses. In order to accept or reject the hypotheses, P-value=0.05 is used and the results under 0.05 ($P < 0.05$) are considered significant.

Results

A total of 735 Cutaneous Leishmaniasis patients was identified in clinical or preclinical manner from 2008 to 2016 in Khorramshahr. The highest rate was related to 2009 with 327 (44.5%) and 2010 with 35.4% cases. The number of patients in the studied years is depicted in Figure 1.

From among the diagnosed patients, 453 (61.6%) were men and 282 (38.4%) were women, which, with the significance level of 0.000 shows that men are significantly acquiring Cutaneous Leishmaniasis more than women.

Data analysis showed that Cutaneous Leishmaniasis patients are significantly higher in number in urban areas (500 patients, 68%) than rural areas (235). Table 1 shows the demographic characteristics of the patients.

178 patients belonged to the age group of less than 10 years old. However, most of them (243) belonged to the age group of above 30. The age group of Cutaneous Leishmaniasis patients shows significant differences with each other; also, there is a direct relationship between age and patients with P-Value=0.273 (Table 2).

It was revealed by examining the patients that the number of ulcers in the upper limbs was 38.8% (309 ulcers) and the smallest number of ulcers was identified in the neck (16 ulcers or 2%) (Table 1).

Table 3 and Figure 2 show the outbreak of the disease in relation to population, age, and address.

The highest number of diseases was observed in December (157), November (128) and January (115) (Figure 3).

Discussion

Results show that the outbreak is significantly higher in men than women (61.6% vs. 38.4%). This may be due to the presence of men in outdoor areas for longer times than women in the peak activity intervals of the mosquitoes, and wearing less-protective clothes than women, which makes a bite by the *Phlebotomus* mosquito more probable. In previous studies in Iran and other countries, too, the higher number of bites in men is reported (4, 5, 10, 11); though there are studies in which the number of bitten women is higher (3).

About two thirds (68%) of Cutaneous Leishmaniasis cases live in urban areas. This may be due to unfinished and under-construction buildings which house the mosquitoes for spawning. This is consistent with the results of other studies in Iran (5, 11, 12) and other countries (13). However, a higher number of cases in rural areas are reported in some studies, too (4, 14).

According to the data analysis, the highest number of cases was diagnosed in above-30-year-old subjects. This group consists of the more active people in terms of work, and is predictable. Also, this is consistent with the results

Figure 1: Number of patients with Cutaneous Leishmaniasis in Khorramshahr from 2008 to 2016

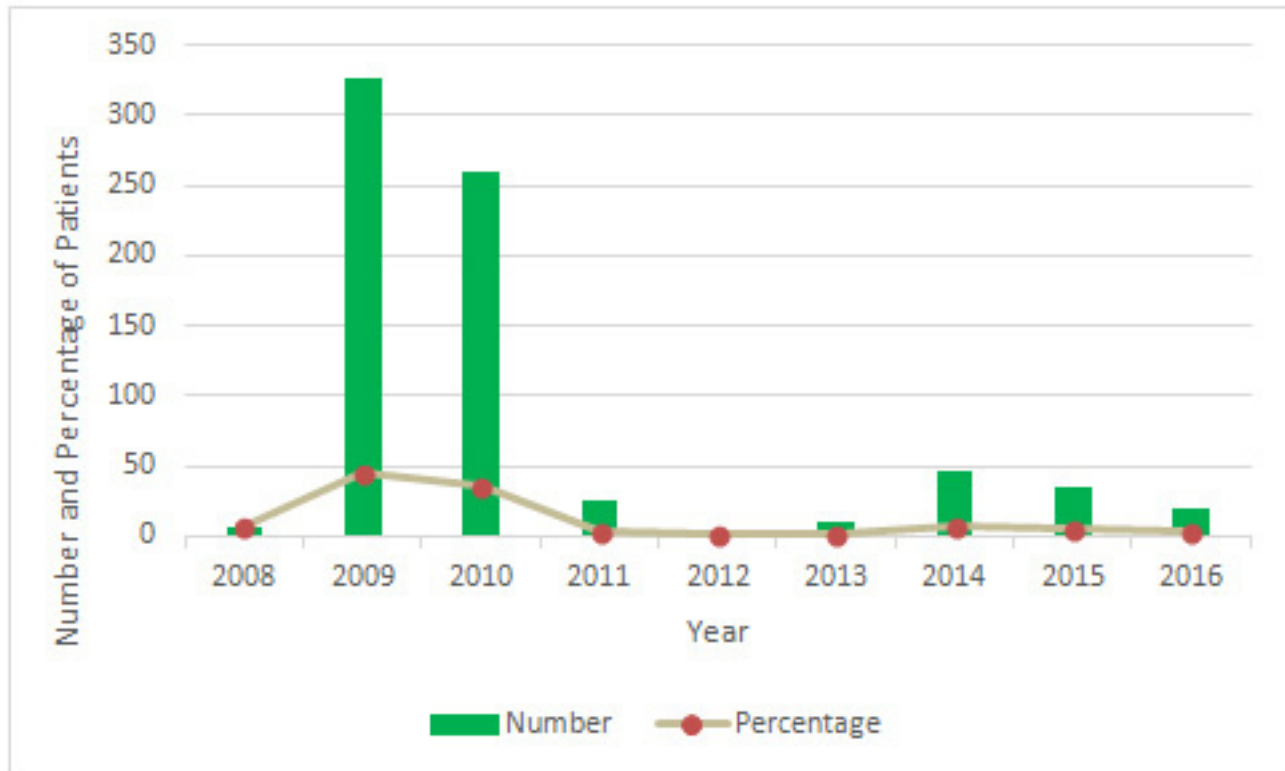


Table 1: Demographical characteristics of the patients with Cutaneous Leishmaniasis in Khorramshahr from 2008 to 2016

		Frequency	Percent
Gender	Male	453	61.6
	Female	282	38.4
Region	Urban	500	68.0
	Rural	235	32.0
Location of the Ulcers	Head and Face	122	15.3
	Neck	16	2.0
	Hand	309	38.8
	Leg	296	37.2
	Trunk	53	6.7

Table 2: Frequency of Patients with Cutaneous Leishmaniasis in Khorramshahr from 2008 to 2016 according to Age

Age Group	Frequency	Percent	
<1	14	1.9	P-Value=0.000
1-4	77	10.5	
5-9	87	11.8	
10-14	65	8.8	
15-19	75	10.2	
20-24	91	12.4	
25-29	83	11.3	
+30	243	33.1	

Table 3: The Prevalence of Patients with Cutaneous Leishmaniasis in Khorramshahr from 2008 to 2016 according to their Gender and Region

	Frequency	Prevalence /100000
Male	453	152.51
Female	282	102.50
Urban	500	39.63
Rural	235	48.07
Total	735.00	41.99

Figure 2: Frequency of Patients with Cutaneous Leishmaniasis in Khorramshahr from 2008 to 2016 according to Age and Gender

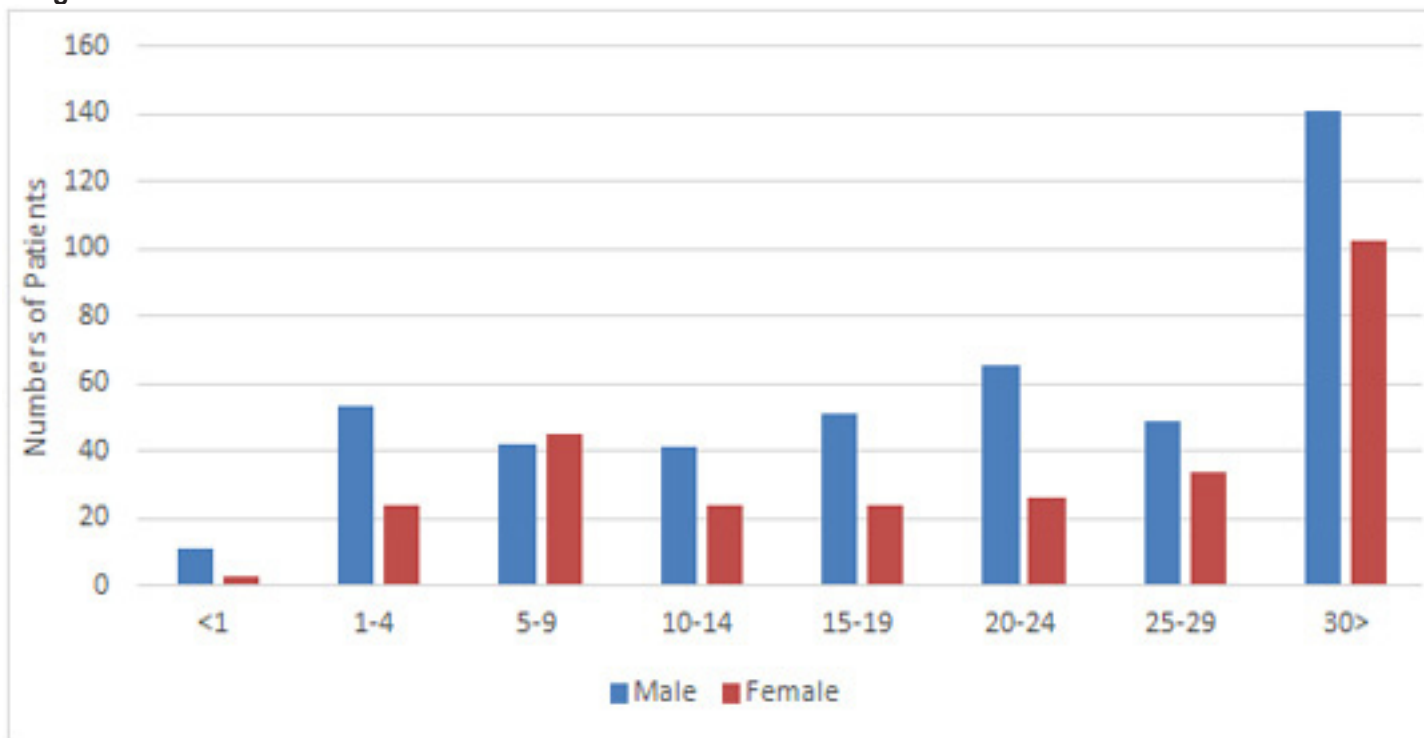
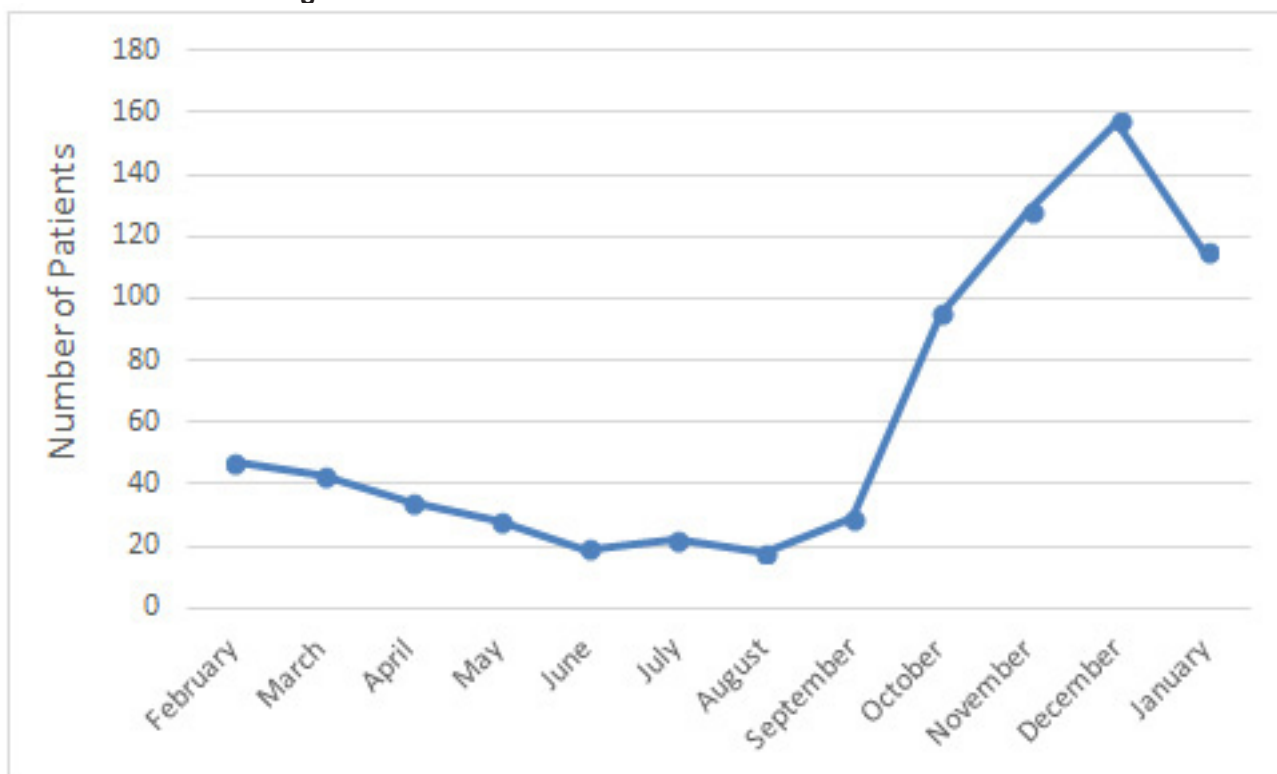


Figure 3: Frequency of Patients with Cutaneous Leishmaniasis in Khorramshahr from 2008 to 2016 according to months of contracting leishmaniasis



of Galgamuwa in Sri Lanka (4). In the present study, the number of under 10-year-old cases was 178, which is a high number. This is related to both 1) children playing games outdoors in the peak activity time of the mosquito, and 2) the weaker immune system of their bodies. Also, in most studies, children make the highest number of infected subjects (3, 5, 12, 14-16).

In 735 studied cases, the highest number of ulcers was observed in the upper limbs (38.8%), followed by the lower limbs (37.2%). The smallest number of ulcers was observed in the neck (2%). In studies like Galgamuwa in Sri Lanka (4), Pontello in Londrina (10), Vazirian Zadeh in Ramshir (12), the highest number of ulcers was observed on the hands. However, the study by Özkeklikçi in Turkey (16) indicated that the higher number of ulcers was on subjects' faces.

Finally, maximum number of infected cases were observed in December, November, and January, and the minimum number was in August. In previous studies in various places and climates, which determine the peak activity time of the mosquito, various months were indicated for the highest patient number, i.e., September (11), March (12) and February, and lowest patient number, i.e., August, August (12) and March (11).

Generally, it seems that in the study region, Cutaneous Leishmaniasis is mostly the disease of urban areas; and, since most cases were observed in men, education courses should be planned, focused on men, to prevent the outbreak of the disease in urban areas.

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References

1. World Health Organization. factsheet no. 375-Tuberculosis. Available at: <http://www.who.int/mediacentre/factsheets/fs375/en/> (Accessed September 2017)
2. Bsrat A, Berhe N, Balkew M, Yohannes M, Teklu T, Gadisa E, et al. Epidemiological study of cutaneous leishmaniasis in Saesie Tsaeda-emba district, eastern Tigray, northern Ethiopia. *Parasites Vectors*. 2015;8:9.
3. Ayubi E, Ashrafi-Asgarabad A, Safiri S, Kousha A, Baniasadi M, Augner C. Post-treatment Clinical Outcomes of Cutaneous Leishmaniasis in the Bam Area, South Eastern Iran: Analysis of over 9,000 Cases. *International Journal of Infectious Diseases*. 2015;34:e61-e5.
4. Al-Jiffri, O.H., Alsharif, F.M. (2017). Levels of circulating adipokines and their relation with glycemic control and insulin resistance in Saudi patients with non-alcoholic fatty liver disease. *European Journal of General Medicine*;14(4):99-102
5. Khazaei S, Hafshejani AM, Saatchi M, Salehiniya H, Nematollahi S. Epidemiological Aspects of Cutaneous Leishmaniasis in Iran. *Arch Clin Infect Dis*. 2015;10(3):5.
6. Ministry of Health and Medical Education, Deputy of Health-Guideline for Cutaneous Leishmaniasis in Iran. 2012.
7. Nilforoushzadeh MA, Shirani-Bidabadi L, Hosseini SM, Fadaei-Nobari R, Jaffary F. The epidemiology of cutaneous leishmaniasis in Isfahan province, Iran, during 2001-2011. *Journal of Isfahan Medical School*. 2015;32(315):2241-51.
8. Fazaeli A, Fouladi B, Sharifi I. Emergence of cutaneous leishmaniasis in a border area at south-east of Iran: an epidemiological survey. *J Vector Borne Dis*. 2009;46(1):36-42.
9. Bamorovat M, Sharifi I, Dabiri S, Mohammadi MA, Fasihi Harandi M, Mohebbali M, et al. Leishmania tropica in stray dogs in southeast Iran. *Iranian Journal of Public Health*. 2015;44(10):1359-66.
10. Sundus-Uygun, S., Sivri, M., Topsakal, A., Dikener, A.H. Soyulu, H., Annagur, A. (2017). Meckel Gruber syndrome: A case report with review of literature. *European Journal of General Medicine*;14(4):108-110
11. Khademvatan S, Salmanzadeh S, Foroutan-Rad M, Bigdeli S, Hedayati-Rad F, Saki J, et al. Spatial distribution and epidemiological features of cutaneous leishmaniasis in southwest of Iran. *Alex J Med*. 2017;53(1):93-8.
12. Vazirianzadeh B., Hoseini S. A., Pour Rezaee S., Gardani H., Amraee K. Prevalence of Cutaneous Leishmaniasis in Ramshir, Iran. *An Epidemiological Study*. *International Archives of Health Sciences*. 2014;1(1):41-37.
13. Korkmaz, S., Turhan, L., Sağlam, S., Atmaca, M. (2017). Sociodemographic and clinical characteristics of patients with violence attempts with psychotic disorders. *European Journal of General Medicine*;14(4):94-98
14. Khosravani M, Moemenbellah-Fard MD, Sharafi M, Rafat-Panah A. Epidemiologic profile of oriental sore caused by Leishmania parasites in a new endemic focus of cutaneous leishmaniasis, southern Iran. *Journal of Parasitic Diseases*. 2016;40(3):1077-81.
15. Kalkan, H., Odev, K., Poyraz, N., Görmüş, N. (2017). Thoracic application of multi-detector CT: A pictorial essay. *European Journal of General Medicine*;14(4):103-107
16. Al-Jiffri, O.H (2017). Adhesive molecules and inflammatory markers among hepatitis C virus Saudi patients. *European Journal of General Medicine*;14(4):89-93