



## Cutaneous leishmaniasis in the patients referred to medical laboratories in Mashhad, Iran

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### Abstract

This study was conducted over four seasons from 2011 to 2012 on people referring to medical laboratories for diagnosis of cutaneous leishmaniasis. To confirm the disease, a smear was prepared from patients' ulcer, then stained by Giemsa and examined by light microscope. From a total of 100 patients with cutaneous leishmaniasis, 58 percent were women and 42 percent were men. The highest rate of the disease was observed in the age group of 20-29 years (34%) and in the age group of 0-9 years (24%). According to confirmation of laboratory diagnosis, the highest rate of the disease (40%) was observed in patients in fall and the lowest rate (15%) was seen in spring. The results showed that 18% of patients had contact with dogs and rodents at home or office. A total of 217 ulcers were counted in 100 patients with the highest rate of ulcers observed in hands and face and the lowest rate seen in legs. In this study, 76% of patients had dry ulcers and the rest had wet ulcers. The results of the study indicate a relatively high prevalence of cutaneous leishmaniasis in Mashhad. Given the results, health authorities need to pay attention to control and prevent the disease.

**Keywords:** Cutaneous, Leishmania, mashhad

### Introduction

Cutaneous leishmaniasis is seen in two urban and rural forms in Iran, each with numerous centers. Rural cutaneous leishmaniasis due to *Leishmania major* and urban cutaneous leishmaniasis is due to *Leishmania tropica* [1]. Mashhad is one of the known centers of cutaneous leishmaniasis in Iran, and from 1998 to 2009 a total of 34,958 patients were reported from four health centers of Mashhad with the highest and lowest contamination reported as 15.9% in 2002 and as 2.3% in 2000, respectively [2]. In a study, 55 cutaneous

leishmaniasis cases from Mashhad were studied by Restriction Fragment Length Polymorphism-Polymerase Chain Reaction (RFLP-PCR) method to determine the type of *Leishmania* species where 38 cases (66%) of *Leishmania tropica* and 17 cases (34%) of *leishmania major* were diagnosed [3]. Over the past few years, Mashhad has gone through substantial demographic and geographic changes because of immigrant's population increase, which have affected the prevalence and incidence of the disease. Hence, it is necessary to have enough information on the

current epidemiological status of the disease to control and prevent the disease in the city. In this study, the relationship between some risk factors and cutaneous leishmaniasis was assessed in a number of patients in Mashhad.

### Method

This study was conducted over four seasons from the beginning of winter 2011 to the end of fall 2012. Simple random sampling was used to select from patients who attended three medical diagnostic laboratories in Mashhad city for diagnosis of skin ulcers. For laboratory diagnosis of the disease, a direct smear of patients' ulcers was prepared scraping the ulcer and sampling ulcer discharges by a scalpel or lancet. Then they were stained by Geimsa and examined by light microscope. The patients whose diagnosis was confirmed were selected for this study and their data were recorded in a checklist. The information of one hundred patients were collected and summarized over four seasons and the results were analyzed by Chi-square test.

**Table 1** The gender profile of patients with cutaneous leishmaniasis for each age group, the season of attending the laboratory and direct contact with animals as reservoirs of the disease

Gender	Age group						Season				Contact with dog and rodent		Total
	0-9	10-19	20-29	30-39	40-49	>50	Spring	Summer	Autumn	Winter	+	-	
Man	12	0	14	10	4	2	0	8	22	12	12	30	42
Woman	12	4	20	8	10	4	15	15	18	10	6	52	58
Total	24	4	34	18	14	6	15	23	40	22	18	82	100

### Discussion

The study was conducted on hundred patients who attended three medical laboratories in Mashhad where their cutaneous leishmaniasis was confirmed by microscopic observation of Leishman bodies in direct smears prepared from their ulcers. In this study, no significant difference was observed between men and women in terms of prevalence of cutaneous leishmaniasis. In similar studies conducted in Iran by Rafati *et al.* in Damghan and also by Dehghan *et al.* in Larestan no significant

### Results

Of 100 patients under study, 58 percent were women and 42 percent were men and no significant difference was observed between the two genders. The highest rate of the disease (34%) was reported in the age group 20-29 years and in the age group 0-9 years (24%) and the lowest rate (6%) was reported in the age group over 50 years ( $P < 0.05$ ). Seasonal prevalence showed that the highest rate of the disease was in fall and the lowest rate was in spring ( $P < 0.05$ ). Only 18% of patients had a direct contact with animals at home or at work (Table 1). A total of 217 ulcers were counted in 100 patients with the highest rate observed in hands and face, respectively, and the lowest rate seen in legs ( $P < 0.05$ ). The majority of patients had 1 or 2 ulcers and the minority of patients had more than 6 ulcers in the body. In 76% of patients (55.8% of ulcers) the ulcer was dry and in 24% of patients (44.2% of ulcers) the ulcer was wet, and also 68% of patients (52% of ulcers) lived in new buildings and the rest of them lived in old buildings ( $P < 0.05$ ).

difference was found between cutaneous leishmaniasis in men and women [4,5]. In this study, the highest rate of the disease was observed in the age group 0-9 years (24%) and in the age group 20-29 years (34%). The results of this study are consistent with other studies in Iran. The highest prevalence of the disease was observed in the age group 10-19 years (22.9%) and 20-29 years (39.4%) [4] in Rafati *et al.* study in the age group 10-14 years, 15-19 years and 20-24 years [6]. Abbasi *et al.* study, in the age group 0-9 years

(43.94%) in Dehghan et al. study[5]. Results of all studies suggest a high prevalence of the disease among young adults, adolescents and children. In this study, the highest seasonal prevalence was reported in fall (40% of patients), and the lowest rate was obtained in spring (15%). These results are consistent with the seasonal prevalence of cutaneous leishmaniasis reported by Nadim et al. [7] Since the animal reservoir has a critical role in the prevalence and incidence of both urban and rural cutaneous leishmaniasis, we studied patients' direct contact with dogs and rodents at home and office and its relationship with the incidence of cutaneous leishmaniasis and it was found that 18% of patients had close contact with dogs. Whether dogs can be the major reservoir of urban leishmaniasis requires further investigation. Results of the study show higher frequency of ulcers in hands and then in face. In studies conducted in Iran, Dehghan et al., and Saghafipour et al. also reported the highest rate of ulcers in hands and face and then in legs [5,8]. In the current study, 51.6% of patients had 1-2 ulcers, 41.9% of patients had 3 to 6 ulcers and only 6.5% of patients had more than 6 ulcers. These results are consistent with the results of studies conducted by Yaghoobi et al. [9], Dehghan et al. [5] and Rafati et al. [4]. In this study, the size of most ulcers was less than 5 mm. Furthermore, less than 6 months had passed since the appearance of ulcer in 92.6% of patients, which shows the relationship between size and duration of ulcers. In this study, ulcer type and patients' residence age (new and old buildings) were studied. Among 76 patients with dry ulcers, 62 cases lived in new buildings, while among 24 patients with wet ulcers, only 6 patients lived in new buildings.

### Conclusion

According to the results, it is suggested that health authorities perform active screening, follow-up treatment non-compliance and raise awareness about the disease transmission, control and prevention. Furthermore, performing applied studies, and cooperating

with other organizations such as Veterinary Organization and municipality are among other ways to control and prevent the disease.

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### Contributions

Study design: GRR

Data collection and analysis: GRR, MKS, AN

Manuscript preparation: GRR, MKS

### Conflict of interest

"The authors declare that they have no competing interests."

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