Original Article

Incidence Rate of Cutaneous Leishmaniasis in Chabahar within 2008-2010

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Received: 2015/11/12 **Accepted:** 2016/02/15

Abstract

Introduction: As Lieshmaniasis is considered as a huge hygienic problem and since epidemiological studies are effective in controlling this disease as well as taking prevention steps, the present study aims to assess the incidence rate of cutaneous lieshmaniasis in Chabahar, Sistan and Baluchestan within 2008-2010.

Materials and Methods: This descriptive-analytical study has been conducted on the victims of cutaneous leishmaniasis during previous years in health centers of Chabahar, by extracting the demographic and epidemiologic information, recorded in Chabahar health centers, as well as analyzing the study data via SPSS software (ver, 18).

Results: Out of total victims of cutaneous leishmaniasis under the study, the total incidence rate was reported 114 and 90 cases/100000 person-years, respectively, in males and females. The highest total incidence rate of the disease was in the age range of birth to 4 years (incidence rate of 196 cases/100000 person-years) and the lowest one in the age range of 5 to 9 years (incidence rate of 70 cases/100000 person-years). Most damages (wounds) were observed in the hands and feet. Moreover, the majority of the patients had two wounds (incidence rate of 66 cases/100000 person-years). The studied patients were Iranian and Afghani with the majority belonging to the former. A sum of 241 patients (37%) lived in cities, whereas the remaining 412 patients (63%) resided in the villages. Moreover, the highest incidence rate of the disease was reported in winter (2008) and the least one in autumn (2010).

Conclusion: As the study results revealed, disease incidence rate in Chabahar during 2008-2010 had a descending trend, which can indicate an improvement in educational-hygienic status as well as observance hygiene practices by the people.

Keywords: Chabahar; Cutaneous leishmaniasis; Epidemiological feature

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Introduction

Cutaneous leishmaniasis is one of the zoonotic parasite diseases, which has been called among the sixth row of important infectious diseases of the world tropical regions by WHO. It is endemic in 88 countries from four continents of the world (22 countries in Europe and America and 66 countries in Asia and Africa), regarded as the most important disease of tropical and subtropical diseases after Malaria [1-3]. Currently there are 12 million victims of Leishmaniasis in the world [4] . Annually, two million new cases of the disease occur, half million of which are visceral and 1.5 million are cutaneous [4]. Ninety percent of cutaneous leishmaniasis occurs in seven countries of Afghanistan, Algeria, Brazil, Iran, Peru, Saudi Arabia, and Syria [4]. As a matter of fact, different Leishmania parasites can be mentioned as the disease agent [4]. Humans can be infected by the sting of female sandfly (phlebotomus), which normally lives in forests, caves, and small rodents' lairs [5]. The disease is one of the most important and commonest local diseases of Iran and the second parasitic disease after malaria, transmissible from arthropods, which can be seen both in urban and rural regions [6]. Annually, 20 thousand cases of cutaneous leishmaniasis are reported from various parts of the country, which is estimated to be many times more in reality [7] and .thus, leishmaniasis is considered as a huge hygienic problem in Iran [3]. Cutaneous leishmaniasis has been increasinly appeared in Iran.In fact, the number of positive cases in 2005, compared to 2011, had risen for about 105% [8].The disease incidence has been reported to be high in Khorasan, Fars, Isfahan, Khuzestan, and Kerman, etc., among which such provinces as Ilam, Yazd, and Bushehr demonstrated the highest frequency within recent years[8]. In general, the highest rate of disease occurrence in the country was observed in such provincesas Yazd, Bushehr, Khorasan, Fars, Ilam, Khuzestan, and Isfahan with an average of 166 cases out of 100 thousand people,, whereas the lowest rate of cutaneous leishmaniasis (less than 10 cases in 100,000 people) was reported in western and north western provinces of the country [9]. The disease imposes heavy economic burden on families, societies, and countries, specifically the developing ones [4]. The 5-capacity antimony (glucantime) is used to cure the disease which is an expensive medicine, requiring frequent injections [10]. It should be noted that the parasite's resistance to this medicine is also common [10]. Moreover, it has various important side effects such as arrhythmia, pancreas and liver enzymes, leukopenia, anemia, and thrombocytopenia, which on rare cases, it results in cardiac toxicity and sudden death [4]. Since epidemiological studies are effective in controlling the disease as well as taking preventive steps, the present study aims to carry out an epidemiological survey of cutanoues leishmaniasis in Chabahar, Sistan and Baluchestanwithin 2008-2010, demonstrating a decrease of disease as a result of healthcare promotion along with other factors such as health education in high level via health experts of the region as well as presentation of preventive methods by health officials, concerning sand flies' sting.

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Materials & Methods

This descriptive-analytical study was conducted on the cutanoues leishmaniasis victims who had visited health centers and lab clinics of Chabahar within 2008-2010. After carrying out the required tests and confirming the disease in the visiting people, their information was recorded in specific patient forms and then, they underwent the required remedies. The required information was extracted from Information Record System of Chabahar such as the patient's age sex, place of residence, ethnicity, inflicted body organ and infection season. Moreover, the patients' demographic data were analyzed via SPSS software (ver, 18).

Results

The present study was conducted on 653 positive cases of cutaneous leishmaniasis within 2008-2010, among which 373 (57%) were males and 280 (43%) were females. during the three years of this study, the most victims of the disease was observed in 2008 (men 25.4% and women, 17.7%), whereas in 2009 the rates differed to 15.6% men and 13.4% women, and in 2010, 16% and 11.6% were reported for male and female patients respectively. The total incidence rate among males was 114 cases/100000 person-years and 90 cases/100000 person-years in females. As the results indicated, the highest incidence rate was observed among men in 2008 (with an incidence rate of 158 cases/100000 person-years), whereas the lowest one was reported in 2010 (with an incidence rate of 92 cases/100000 person-years). Moreover, the highest incidence rate was reported among women in 2008 (with an incidence of 116 cases/100000 person-years) and the lowest one in 2010 (with an incidence rate of 70 cases/100000 person-years) (Table 1).

Table 1: Incidence rate of cutaneous leishmaniasis infection based on victims' sex

Sex	2008	2009	2010
Male	158	94	**92**
Female	116	86	**70**

The highest total incidence rate of the disease was observed in the age range of birth to 4 years (incidence rate of 196 cases/100000 person-years) and the lowest one in the age range of 5 to 9 years (incidence rate of 70 cases/100000 person-years). The incidence rate had declined in all the studied age groups within 2008-2010, except from 2009-2010 in the age group of 20-29 years (Table 2).

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Table 2: Incidence rate of cutaneous leishmaniasis infection based on victims' age

Age	2008	2009	2010
0-4	330	144	330
5-9	74	70	74
10-19	110	100	110
20-29	102	69	102
30-39	83	80	83
40-49	138	49	138
Beyond 50	150	99	150

In regard with inflicted body organ, the highest total incidence rate belonged to the patient's hands and feet (the total incidence rate of 66 cases/100000 person-years) and the lowest one was related to other organs (an incidence rate of 8 cases/100000 person-years). In general, the incidence rate decreased from 2008-2010 except from 2009-2010, during which it had slightly increased in related to other organs). (Table 3).

In general, the incidence rate of disease was reduced within 2008-2010 in urban areas, though in rural areas, it increased slightly within 2009-2010. Therefore, the total incidence of the disease was also based on the location of the subjects, so as it was reported higher in rural areas compared to urban areas (Table 3).

Seasonal incidence rate is presented in Table 3. As it can be seen, the total incidence rate of the disease occurred in winter and the lowest one was related to summer season.

Table 3: Incidence rate of cutaneous leishmaniasis victims based on the infected organ, place of residence, and the infection season

Infected organ		2008	2009	2010
	Face	35	25	22
	Hands and feet	88	61	51
	Other organs	14	3	7
Place of residence	Urban	177	93	45
	Rural	114	88	100
Season	Spring	32	30	19
	Summer	22	20	22
	Autumn	33	18	16
	Winter	49	20	23

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Discussion

The main aim of the present study was to assess cutaneous leishmaniasis in Chabahar within 2008-2010, in regard with sex, age, infected organ, place of residence, and season of the year. The results showed that the incidence rate of the disease had a decreasing process as the years passed, demonstrating an improvement in educational-hygienic status as well as people's following of hygiene practice. In the current study, 57% of the victims were males and 43%, were females and the incidence rate of disease was higher among men than women.One of the main causes of higher incidence rate among men than women is that men stay more outside home at night because of their job (horticulture) that do not have appropriate clothing to prevent mosquito bites, and therefore, they are more susceptible to mosquito bites. Similar studies have been conducted in Damghan, Kermanshah, Barkhoar in Isfahan, and Gonbad Kavoos demonstrating that the percentage of the men were reported to be more than that of women [11-15],whereas in a study in Abarkooh, Yazd, the number of cutaneous leishmaniasis victims was more within women compared to men [16]. Higher proportion of the men to women could be due to their occupations, less immunity, less clothing, hot weather of the region, and exposure to sand flies [17]. Probably cultural and behavioral factors as well as the type of clothing caused men to be more exposed to the disease than women 18].

As the findings of the conducted studies revealed, the highest incidence rate of cutaneous leishmaniasis was related to the victims aged from birth to 4 years.Probably, the highest incidence rate of the disease in lower ages was due to their less immunity as well as more stings of the mosquitoes; however, other studies did not confirm our results as in the study conducted by Talari et al., the most frequency of infestation was seen in the ages 0 to 10 years [19]. Moreover, according to study results by Yaghoubi et al. in Yazd as well as those of Gurel et al., the highest percentage of infestation was reported from 5 to 9 years of age[7, 20]. In another study by Uzun et al., the greatest age of infestation was 10 to 19 years [21].

The present study findings showed that the total incidence rate of the disease has occurred in winter and the lowest one was related to summer season. As it is known, this season (winter) in the tropical region of chabahar is quite favorable for sandflies' reproduction and activity. Howover,in extremely hot seasons like summer and the months of May and June, the lowest cases were observed in chabahar due to reduced activity and reproduction of vectors at this time of year, while in a study by nadim et al., the occurrence rate of cutaneous leishmaniasis approached zero until the middle of March in accordance to the seasonal changes, [18]. In other studies, conducted in Damghan, Gonbad Kavoos, and Aran Bidgol (in Isfahan province) the most cases of the disease was observed in April and September [11, 15, 22].

The results revealed that, in regard with inflicted body organ, the highest total incidence rate belonged to the patient's hands and feet (with an incidence rate of 66 cases/100000 person-years) and the lowest one was related to the other organs (with an incidence rate of 8 cases/100000 person-years), respectively. Furthermore, a similar study

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carried out in Mir Javeh, Zahedan, reveals the same results and a study conducted in Pakistan, reported the most infections to occur in the hands. As a result, both these studies confirm the findings of the present study [23, 24]. A study carried out in Cukorova, Turkey, reports the most infections spreaded in the hands, feet, and other organs respectively [21].

Conclusion

Based on the findings of the current study, the disease represented a descending process indicating the promotion of educational-hygienic status as well as observance of personal hygiene principals by the people.

Acknowledgements

We hereby thank disease experts of healthcare network in Chabahar for their assistance in surveying cutaneous leishmaniasis epidemiologically

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