

INCIDENCE OF LEISHMANIASIS IN AL BAHA PROVINCE, SAUDI ARABIA: PAST AND PRESENT SITUATION (OBSERVATIONAL AND DESCRIPTIVE STUDY)

By

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Abstract

Cutaneous leishmaniasis (CL) is a worldwide skin protozoan infectious disease. This study evaluated the past and present situation of CL in Al-Baha Province. The incidence of CL patients over a total of (250,000) mid-year population was recorded from January to December in both years of 2012 and 2013. The statistical analyses were carried out with SPSS version 12.0 for windows.

The highest number of patients was in 2012 with 11 cases in this year. 37.5% of patients aged younger than 15-year and 62.5% were older than 15 year. The highest incidence of disease was observed in Almandak Governorate in 2012 (8 over 250,000 mid-year population), and the lowest incidence rate was in Al-Tawlah Governorate in the same year. The disease was observed with the incidence rate over 250,000 mid-year population of 3,3,2,1,1 and 1 for January, May, December, March, June and September 2012 respectively and 3,1, and 1 for June, January and April 2013 respectively. The highest incidence of disease was observed among males, Saudi patient who are resident in Al-Baha in both years of 2012 and 2013.

Keywords: Cutaneous leishmaniasis, Incidence, Al-Baha, Parasites, Saudi Arabia

Introduction

Leishmaniasis, a major global health and economic issue, comprises a group of diseases caused by the protozoan parasites of the genus *Leishmania*. Transmission of leishmaniasis to mammals, including humans, requires the bite of female phlebotomine sandflies (Postigo, 2010).

Although estimated to cause the ninth largest disease burden among individual infectious diseases, leishmaniasis is largely ignored in discussions of tropical disease priorities (Hotez et al., 2006). Cutaneous leishmaniasis (CL) is endemic in some countries in the Middle East, on the Mediterranean coast and in central Asia. Barsky (1978). The disease was first described in Saudi Arabia by Morsy and Shoura (1973). Then, they published a series on CL in Riyadh the Capital (Morsy, 1975; Morsy and Hawwary, 1974), in Bisha Town, Asir Province (Sebai and Morsy, 1975), Western Region of Saudi Arabia (Abdel-Wahab et al., 1985); treatment (Morsy and Shoura, 1973; Sebai et al.,

1075), Hofuf, Eastern Saudi Arabia (Buttiker and Lewis, 1979) as well as CL animal reservoir in El-Kharj District (Morsy and Shoura, 1975). Morsy and al Seghayer (1992) in Riyadh gave a brief notes on sandflies, Abou el-Ela et al. (1995) in Riyadh identified *Phlebotomous papatasi* as the vector of ZCL, and Morsy et al. (1995) studied the sandflies seasonal and daily activities. On the other hand, *Leishmania aethiopic* was characterized from rock hyrax, *Procavia capensis* in Najran and anthroponotic leishmaniasis (ACL) was demonstrated in Jizan Province (Morsy et al., 2002).

The study aimed the reviewing of ZCL in the last two years and to investigate ZCL status in Al-Baha, southwest parts of Saudi Arabia

Subjects, Material and Methods

A cross-sectional, observational, descriptive study was performed in Al-Baha Province. Al Bahah (Arabic: الباحة *Al Bāḥa*) is the capital of Al Bahah Province nestled between the resorts of Mecca and Abha, Al Baha is

one of the Kingdom's prime tourist attractions. It enjoys a pleasant climate and is surrounded by more than forty forests, including Raghdan, al Zaraeb and Baidan. Al Baha is the headquarters of the Governor, local councils and branches of governmental departments. Receiving the state's special attention, the city of Al Baha abounds in educational, tourist and health institutions, is considered the capital of the Ghamidi and Zahrani tribes in Saudi Arabia, and most of its inhabitants are from the native tribes. The data from the patients who are included in this study were collected from the primary health care Centers of Al Baha Province (Trevor, 1983). Al Baha to Riyadh the Saudi Arabian Capital is 743.29 mi.

The study was conducted from January 2012 to December 2013. A written permission was obtained from the Town Administrative Officials prior to the study. Informed consent was taken from each patient or patient's parents if the patient was less than 12 years old.

The incidence of leishmaniasis patients over a total of (250,000) mid-year population were recorded from January to December over the years 2012 and 2013. After being examined by a physician in the primary health care Centers, the patients provided completed a special questionnaire including age, sex, month, nationality, residency in Al-Baha and presumptive diagnosis. The lesion sites were then biopsied to confirm the diagnosis of leishmaniasis. Following fixation in

methanol for 20-30 sec, the samples were stained with Giemsa (Morsy, 2013). If *Leishmania* amastigotes were observed under the microscope, cutaneous leishmaniasis was confirmed and the patient's completed questionnaire was evaluated.

Statistical analysis: Data were computerized and analyzed using descriptive statistics and SPSS for Windows version 16.0.

Results

A total of 16 new cases over 250,000 mid-year populations with CL have been identified during the two years. There was the higher number of cases of CL in year 2012 (11 cases) the incidence rate was 4.4/100,000 than in year 2013 (5 cases) the incidence rate was 2/100,000.

The numbers of cases (Fig. 1) in year 2012 were three cases in each of January and May, 2 cases in December and one case for each of March, June and September. In 2013 cases were three in June and one case in each of January and April. The numbers of cases (Fig. 2) were in different geographical areas in year 2012 were 8, 2 and 1 cases in Almandak, Al-Baha and Al-Tawlah respectively, while in year 2013 were 2, 2 and 1 cases in Al-Baha, Al-Tawlah and Almandak respectively. Of 16 patients (Fig. 3) ten cases were males and females. They were (Fig. 4) 14 Saudis and 2 cases immigrant workers, but all were (Fig. 5) residents in Al-Baha Province with age groups (Fig. 6) 15- 44 year old (62.5%) and 0-15 year old (37.5%).

Table 1: Number of CL by month in Al-Baha Province.

Months	No. of cases 2012	No. of cases 2103
January	3	1
February	0	0
March	1	0
April	0	1
May	3	0
June	1	3
July	0	0
August	0	0
September	1	0
October	0	0
November	0	0
December	2	0
Total cases	11	5

Table 2: Changes of CL cases by geographical location in Al-Baha Province.

Sector area	No. of cases 2012	No. of cases 2103
Al-Baha	2	2
Al-Tawlah	1	2
Almandak	8	0
Alaquiq	0	0
Buljurshy	0	0
Quelwah	0	0
Al-Mukhwah	0	1
Total cases	11	5

Table 3: Number of CL according to patients sex in Al-Baha Province.

Year	Male	Female
2012	7	4
2013	3	2

Table 4: Number of CL according to patients' nationality in Al-Baha Province.

Year \ Sex	Saudi	Non Saudi
2012	10	1
2013	4	1

Table 5: Number of CL according to patients' residency in Al-Baha Province.

Year \ Sex	Resident	Non Resident
2012	11	0
2013	5	0

Table 6: CL according to patients ages in Al-Baha Province.

Age groups	2012	2013
0-14 years	4	2
15-44	7	3
Total	11	5

Discussion

CL is a parasitic disease, which is caused by the protozoa of the genus *Leishmania*; those infecting man are mainly the *L. tropica*, *L. major*, *L. aethiopica*, and *L. donovani*, *L. infantum*. The infection is transmitted through the small phlebotomine sandflies via the biting of infected human or animal hosts. The clinical characteristics of leishmaniasis depend on interactions of *Leishmania* parasite's invasiveness, tropism, pathogenicity, and hosts' immune responses (Al-Jaser 2005; El-Beshbishy *et al*, 2013). CL is widely scattered throughout the world it is endemic in tropical and subtropical regions, as well as also endemic in Kingdom of Saudi Arabia (Morsy, 1996).

The present study data proved that Al-Baha

Province is an endemic area of the cutaneous leishmaniasis. The data from primary health care centers in Al-Baha Province were critically revised and considered. However, some patients with cutaneous leishmaniasis were visitors and treated by physicians out of the province.

Also, since this disease is a self-limited one, some patients might have been cured without any medications (Nateghi-Rostami *et al*, 2010). Thus, it is possible that the incidence of the disease were underestimated in the present study.

As to, age distribution, 62.5% of the patients were in age group 15-44 year old and 37.5% in age group 0-14 year old and it could be due to lack of information about

possible ways of transferring the disease. This agreed with Hamadto *et al.* (2003) in Egyptian CL patients

There was a significant sex difference for the incidence of CL as 62.5% were males and 37.5% females. This could be due to the way of dressing among women in Al-Baha Province who spend all time indoors, as well as men normally work outdoors,

This fact agreed with Al-Samarai and Al-Obaidi (2009) in Iraq and Nazari, (2012) in Iran.

A significant difference for the incidence of cutaneous leishmaniasis among different nationalities showed that 87.5% of infections among Saudi patients followed by 12.5% among immigrant workers, but all were resident in Al-Baha. This agreed with Hotez *et al.* (2012) who considered leishmaniasis particularly cutaneous forms are one of the neglected insect-borne diseases in the Middle East.

As regards the incidence of cutaneous leishmaniasis seasonal distribution, it was high in winter and at the beginning of summer, and relatively low in spring, autumn and early winter. The month distribution of the disease through the province reflects the rural type of the disease, which is more prominent in three governorates Almandak, Al -Baha and Al-Tawlah respectively. This agreed with Merdan *et al.* (1992) in Egypt Northern Sinai related to reservoir activity and Doha and Samy (2010) related to the bionomics of the sandfly vector.

Conclusion

The outcome results showed that CL is endemic in Al-Baha Province, Kingdom of Saudi Arabia. There must be strategy the control of both the animal reservoir(s) and *Phlebotomus* species vector.

The Public Health and Veterinary Authorities must pay attention to control of the insect-vector and the animal reservoir(s) to minimize disease transmission. No doubt, the collaboration of other regional health authorities will have a feedback as the King-

dom transected with many immigrant employees

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