Cutaneous Leishmania in Wadi Hadramout, Yemen

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ABSTRACT

Background: Cutaneous leishmaniasis is widespread in Yemen, but its extent has not been documented fully.

Objectives: The objective was to describe epidemiological and clinical features of cutaneous leishmanias cases.

Methods: It was a retrospective descriptive records review of all patients with cutaneous leishmaniasis diagnosed at the Seiyun general hospital from January to December 2013.

Results: A total of 122 patients were diagnosed with cutaneous leishmaniasis. They were 73 (59.8%) males and 49 (40.2%) females with the ratio male to female 1.5:1.

The age of patients ranged between 1 to 62 years and the mean age is 26.5 ± 18.1 years.

Most of the patients 56(45.9%) were of age group less than 20 years.

The most common type of lesions were nodulo-ulcerated 52(42.7%) followed by nodular 45(36.9%).

The distribution of sex, in which males and females of age group less than 20 years, were predominant 38 (31.1%) and 18 (14.8%) respectively.

The rest of the patients, males and females, were convergent (p >0.05).

The majority of lesions’ site were lower limb 63 (51.6%) and the single lesions were predominant 76 (62.3%) also, the most lesion sizes were 0.5 cm 67 (54.9%) and 1 cm 50 (41%). Skin smears were positive in 102 (83.6%), negative in 9 (7.4%) and not done in 11 (9.0%) patients.

Conclusion: We concluded that Wadi Hadramout is an endemic region of leishmaniasis and our findings will be of great interest to the public health authorities in Hadramout.

Key words: Cutaneous Leishmania, Wadi Hadramout, Yemen
Introduction

Leishmaniasis is a parasitic disease caused by more than 20 species of protozoa of the genus Leishmania. It is transmitted by the bite of female sandflies of the genera Phlebotomus (Old World) and Lutzomyia (New World).

Pets and wild animals are the usual reservoir and source of the infection (zoonotic transmission), although the disease can also spread from human to human (anthropogenic transmission). The disease is endemic in more than 80 countries in Latin America, Asia, Africa, and Southern Europe (1). Other published literatures reported that Leishmaniasis is endemic in 88 countries with incidence rate of 1.5-2 million; the most common form of leishmaniasis is cutaneous leishmaniasis (CL) with 1.5 million new cases per year (2,3).

90% of cutaneous leishmaniasis are reported from Iran, Afghanistan, Algeria, Iraq, Saudi Arabia, and Syria in the Old World; and Bolivia, Brazil, Colombia, and Peru in the New World (4).

Yemen is a tropical country, poor, has lack of health care, and most of the population below the poverty line (5).

There are very few reports on leishmaniasis in Yemen in the international literature. Even though it is not well documented, the disease seems to be endemic in the country, and is primarily widespread in arid and semi-arid areas. It is also endemic in the plateau and mountainous areas of Hadramout governorate (5).

Hadramout governorate lies in the eastern part of Yemen. The governorate comprises different topography distributed between coastal plains, mountains and hills of heights reaching 2000 m above sea level, large areas of Al-Ruba Al-khali desert, with many valleys; the largest Hadramout valley which is supplied by many branch valleys, is the longest valley and the most fertile in the Arab peninsula since it is 160km long and pours in Sihout on the Arab sea at Al-Mahra governorate. The climate in Hadramout is a hot tropical climate. Hadramout valley is considered one of the highest valleys in technology related to water courses drainage, as ducts water drainage are made within hours, which is not usual in many large valleys in Yemen where water courses continue running for a long time. Seiyun city located 322km from Mukalla, is the largest city in Hadramout valley and it is the administrative capital of the valley (6).

Figure 1: Cutaneous leishmaniasis
Objectives

To describe epidemiological and clinical features of cutaneous leishmaniasis cases identified recently in Seiyun district, Hadramout, Yemen.

Materials and Methods

Study area:
The study was conducted in Seiyun general hospital which is the central hospital of Hadramout valley and located in Seiyun city, Hadramaut, Yemen.

The hospital is a tertiary health institution that renders medical care to its host community and environs.

It serves as a referral center for neighbouring areas which include cities of Hadramaut valley and the surrounding villages.

Study period
This study was performed during the period January to December 2013.

Study Design
A retrospective descriptive records review was conducted.

Study sample:
The study population consisted of all patients with cutaneous leishmaniasis diagnosed at the Seiyun general hospital from January 2013 to December 2013.

The diagnoses were made by consultant dermatologist, after reviewing the history, physical signs, clinical pictures and clinical investigations of the patients.

Permission was sought and obtained in writing from the director of the hospital and the head of the medical records department of the hospital to collect data from patient’s case notes at the medical records center.

Data collection procedure:
Checklist was prepared for collection of data from patient record.

Data variables:
Data that were collected included the sex, age, type of lesion, site of lesion, number of lesions, size, result of skin smear and histopathology in few cases (when needed).

Data Analysis and Presentation:
The data was analyzed and tabulated through descriptive statistics using Microsoft Excel spreadsheet and SPSS version 17 statistical software.

Figure 2: The geographical location of Hadramout valley (Wadi Hadramout)

Results

In the study year 2013, a total of 122 patients were diagnosed with cutaneous leishmaniasis according to their medical records. They were 73 (59.8%) males and 49 (40.2%) females with the ratio male to female 1.5:1.

The age of patients ranged between 1 to 62 years. The mean age of the patients is 26.5 ± 18.1 years.

Most of the patients 56 (45.9%) were of age group less than 20 years followed by the age group 40 years and more 35 (28.7%).

The most common type of lesions were nodulo-ulcerated 52 (42.7%) followed by nodular 45 (36.9%), papulo-nodular 17 (13.8%), plaque 5 (4.1%) and ulcerated lesions 3 (2.5%) as shown in Table1 and Figures 3 to Figure 6.

Table 1: Variables of sex and Types of lesions (n = 122)

<table>
<thead>
<tr>
<th>Variables</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Males</td>
<td>73</td>
<td>59.8</td>
</tr>
<tr>
<td>Females</td>
<td>49</td>
<td>40.2</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 20</td>
<td>56</td>
<td>45.9</td>
</tr>
<tr>
<td>20-39</td>
<td>31</td>
<td>25.4</td>
</tr>
<tr>
<td>≥ 40</td>
<td>35</td>
<td>28.7</td>
</tr>
<tr>
<td>Type of lesion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Nodular ulceration</td>
<td>52</td>
<td>42.7</td>
</tr>
<tr>
<td>- nodular</td>
<td>45</td>
<td>36.9</td>
</tr>
<tr>
<td>- Papulo nodular</td>
<td>17</td>
<td>13.8</td>
</tr>
<tr>
<td>- plaque</td>
<td>5</td>
<td>4.1</td>
</tr>
<tr>
<td>- Ulceration</td>
<td>3</td>
<td>2.5</td>
</tr>
</tbody>
</table>

Figure 3: Nodular-ulcerated lesion on nose
Figure 4: Nodular lesion on nose

Figure 5: Ulcerated on lower limb

Figure 6: Multiple lesions on upper limb
Table 2 reveals the distribution of sex among the study patients in which males and females of age group less than 20 years were predominant 38 (31.1%) and 18 (14.8%) respectively. The rest of the patients, males and females, were convergent. The difference between values was not statistically significant.

Table 2: Distribution of sex related to age groups

<table>
<thead>
<tr>
<th>Age</th>
<th>Males</th>
<th>Females</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>(%)</td>
<td>No</td>
</tr>
<tr>
<td>&lt; 20</td>
<td>38</td>
<td>(31.1%)</td>
<td>18</td>
</tr>
<tr>
<td>20-39</td>
<td>17</td>
<td>(13.9%)</td>
<td>14</td>
</tr>
<tr>
<td>≥ 40</td>
<td>18</td>
<td>(14.8%)</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>73</td>
<td>(59.8%)</td>
<td>49</td>
</tr>
</tbody>
</table>

Calculation of percentage out of the total patients 122

P > 0.05

In Table 3 most of the lesions' sites were lower limb 63 (51.6%) followed by upper limb 37 (30.5%) and face (9.0%). The single lesions were predominant 76 (62.3%) while multiple lesions were 46 (37.7%). The majority of lesion sizes were 0.5 cm 67 (54.9%) and 1 cm 50 (41%). Skin smear was positive in 102 (83.6%), negative in 9 (7.4%) and not done in 11 (9.0%) patients.

Table 3: Characteristics of cutaneous lesions among study patients (n = 122)

<table>
<thead>
<tr>
<th>Variables</th>
<th>No</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site of lesion:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Lower limb</td>
<td>63</td>
<td>51.6</td>
</tr>
<tr>
<td>- Upper limb</td>
<td>37</td>
<td>30.5</td>
</tr>
<tr>
<td>- Face</td>
<td>11</td>
<td>9.0</td>
</tr>
<tr>
<td>- Upper &amp; lower limb</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>- Both lips</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>- Face &amp; lower limb</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>- Face &amp; upper limb</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>- Nose</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Number of lesions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Single</td>
<td>76</td>
<td>62.3</td>
</tr>
<tr>
<td>- Multiple</td>
<td>46</td>
<td>37.7</td>
</tr>
<tr>
<td>Size:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- 0.5 centimeter</td>
<td>67</td>
<td>54.9</td>
</tr>
<tr>
<td>- 1 centimeter</td>
<td>50</td>
<td>41.0</td>
</tr>
<tr>
<td>- 0.75 centimeter</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>- 1.5 centimeter</td>
<td>2</td>
<td>1.6</td>
</tr>
<tr>
<td>Skin smear:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Positive</td>
<td>102</td>
<td>83.6</td>
</tr>
<tr>
<td>- Negative</td>
<td>9</td>
<td>7.4</td>
</tr>
<tr>
<td>- Not done</td>
<td>11</td>
<td>9.0</td>
</tr>
</tbody>
</table>
Discussion

Leishmaniasis is a worldwide disease (7,8,9). The World Health Organization (WHO) estimates approximately 1 to 2 million new cases of leishmaniasis each year, all over the world (7,10). Twenty Leishmania species are pathogenic for humans and 30 sand-fly species are proven vectors (8). There are two main epidemiological entities (8); zoonotic: where animal reservoir hosts are involved in the transmission cycle and Anthroponotic: where man is the sole reservoir and only source of infection for the vector (8,11,12).

In the present study we found 122 patients were diagnosed with cutaneous leishmaniasis and males were significantly more affected than females; they were 73 (59.8%) males and 49 (40.2%) females with the ratio male to female 1.5:1. However, in a study that was conducted in southeastern France (13), males and females were equally affected with cutaneous leishmaniasis. Other studies in North-central province of Sri Lanka (14), in Lorestan, Iran (15) and Al-Badarna, Libya (16) have shown similar findings to our results.

This sex difference can be attributed to the following: a) most of the residents of Wadi Hadramout are farmers working on farms and they are at risk of sandfly bites. Males are more active in the palm plantations and harvesting dates, they are more prone to sandfly bites.

In our study the age of patients ranged between 1 to 62 years. The mean age of the patients is 26.5 ± 18.1 years and the highest numbers of patients 56 (45.9%) were less than 20 years of age, which is similar to that reported by others (17,18).

In contrast, Sharma et al (19) found a higher incidence of cutaneous leishmaniasis in persons 21-30 years of age. As age increased, the number of patients decreased; this finding may be caused by acquired immunity.

The present study found that most lesions’ sites were lower limb 63 (51.6%) followed by upper limb 37 (30.5%) and face (9.0%). Similar findings were reported by Syed et al (20) from Pakistan that 75% of the patients had lesions on the legs and feet.

The study results of Khatri et al (21) from northwestern Yemen varied to our findings. They reported that the lesions were located on the face in 120 (88%) patients, upper extremities in 31 (23%), lower extremities in 17 (12.5%) and neck in one patient. Also, Al-Qubati (22) mentioned that most lesions occur in the head region, most commonly nose, cheeks, and lips, with about 30% noted on the extremities and a few on the trunk.

Aara et al (17) from India mentioned that the most lesions were located on exposed parts of the body such as the face (33%), upper extremities (41%), and lower extremities (20%). The trunk was involved in only 2% of patients.

Al-Nahhas et al (23) from Syria mentioned that the lesions were mainly located on the upper extremities (67.5%) compared with 25.9% on the facial region and 6.5% on the legs, typical exposed fly bites areas.

This variation of CL lesions location may be due to the exposure of these two sites to the environments more than the other site of the body and to the direct contact with animals and soil because of the traditional clothes of males in Valley Hadramout, which make the lower limbs uncovered.

The majority of lesion sizes in our study were 0.5 cm 67 (54.9%) and 1 cm 50 (41%) which is smaller than that reported in a previous study in northwestern Yemen which reported that the size of the lesions varied from 0.5 to 8 cm (21).

Also, it was smaller than that reported by Aara et al (17) that Lesions varied in size from a few millimeters to 12 cm in diameter and they found a total of 1,938 (71%) of 2,730 lesions ranged in size between 0.5 cm and 3.0 cm, and only 48 lesions were > 5.0 cm.

Similar to our finding was that reported by Aguado et al (24) from Spain that the most common lesion size in their study was 0.5 cm followed by 1 cm.

In our study the single lesions were predominant 76 (62.3) while multiple lesions were 46 (37.7%), similar to the results found by Khatri et al (21) in which eighty-seven (64%) patients had a single lesion, and the rest had multiple lesions. Also, a study finding from Iran reported that the number of lesions was one lesion in (67.7%) of the patients and (32.3%) multiple lesions (15).

Khatri et al (21) mentioned that the types of lesion were: nodulo-ulcerative, 75 (55%); ulcerated plaques, 31 (23%); plaques, 19 (14%); nodular, 5; papular, 2; diffuse infiltration, diffuse infiltration with ulceration, and verrucous thick plaques, 1 each.

The results of the current study revealed that the most common type of lesions were nodulo-ulcerated 52 (42.7%) followed by nodular 45 (36.9%), papulo-nodular 17(13.8%), plaque 5(4.1%) and ulcerated lesions 3(2.5%).

To some extent the results were consistent with previous studies from northwestern Yemen (21) and from Turkey (25). Skin smears were positive in 102 (83.6%), negative in 9 (7.4%) and not done in 11 (9.0%) patients.

Conclusion

We carried out this study in an attempt to compile cutaneous leishmaniasis frequency, types and site locations in patients who attended to Seiyun hospital.

Males were more than females.
The results illustrated that male and female patients of the age less than 20 years are predominant. The most common types of lesions were nodulo-ulcerated followed by nodular and the most of lesions’ sites were lower limb followed by upper limb. The single lesions were predominant and the majority of lesion sizes were 0.5 cm. We concluded that Wadi Hadramout is an endemic region of cutaneous leishmaniasis.

References