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Research Article
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Cross Sectional Study of Cutaneous Leishmaniasis in Dermatology Hospital in Tripoli Libya from 2014 to 2015

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ABSTRACT

Leishmaniasis is a disease caused by infection with the protozoan parasite Leishmania and is responsible for significant mortality and morbidity in tropical and subtropical countries. Unfortunately, there is currently no vaccine available to protect people against infection, therefore the main methods used to control it is vector control, drug treatment of clinical cases or control of reservoir hosts.

The present study aims to determine the frequency of cutaneous leishmaniasis causes, frequency of leishmaniasis between male and female, the distribution of leishmaniasis causes in different area in west Libya among the causes that attended Bear Asta Melid Hospital in Tripoli, Libya.

This study is designed to collect data from files of leishmaniasis patients followed in Dermatology Hospital Bear Asta Melid, Tripoli.

Place and Duration of Study: Dermatology Hospital Bear Asta Melid, Tripoli, period from January 2014 to December 2015

The total of 258 samples were obtained from patient files during the period from the January 2014 to December 2015. The questionnaire was prepared and modified from WHO leishmaniasis questionnaire in leishmaniasis center.

The results indicated that, the frequency of infection was higher in 2015 than in 2014, increased by rate 1.5. The high frequency of infection was in autumn than other seasons, which in October was higher infection rate. The high infection frequency in the younger age group between 0-25 years. The most common infection area was Trahouna, Al kamous, Kabow and Al heria.

There was poor social awareness of the disease and of the availability of treatment in this sampled population. Most of the community considered sand fly biting as a nuisance of moderate intensity and dusk as the peak biting time.

We recommend that more effective surveillance, case reporting, and control measures be implemented in high-risk areas

Keywords*-Leishmaniasis; Risk area; Cutaneous leishmaniasis;Leishmania.*

INTRODUCTION

Generally, with global prevalence of 12 million cases, and annual incidence of 1.3 million and 20,000 to 30,000 deaths, Leishmaniasis, an important public health problem[1], and one of world's most neglected diseases affecting the poorest area in developing countries.[2] Leishmaniasis is one of the parasitic diseases and has second importance to malaria as emerging parasitic disease.[3] Leishmaniasis caused by haemoflagellate protozoan parasites of the genus Leishmania (family Trypanosomatidae), and transmitted to human by the bite of the female Phlebotomus sandflies.[4] Leishmaniasis is one of zoonotic diseases that it's classified into three clinical forms: Cutaneous leishmaniasis (CL), Mucocutaneous Leishmaniasis (MCL), and Visceral Leishmaniasis (VL).[5]

Lesions of CL appear mainly in uncovered areas of human skin. There is a lack of vaccination and/or chemoprophylaxis for controlling the disease.[6] However, the efficiency of alternative way helps in controlling or reducing the risk of CL. Control measures were used to eliminate the invasion of parasite such as insecticide spraying, impregnated bed net and rodent control.[7] While, Health education is very important to minimize resting sites of vector for those who are sleeping outdoors.[8]

In Libya two types of CL; *Leishmania major* and *L. tropica* has been reported,[9] moreover Libya considered

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a favorable climate for rodents' reproduction, which are serves as a reservoir for Leishmaniasis. Risk factors play a main role for increasing the incidence of infection such as outdoors and farming activities.[10] Epidemiological study in Libya predicted in 2060 there will be a trend rise of CL in northwest spreading through northeast of Libya, that is attributed to immigration, urbanization, land use, and access to health care.[11] Therefore, epidemiological study determinate the risk factors, parasite species and drug resistance in different areas are essential for control programmed continues. In this study; data from patient file that follow in Dermatology hospital of Bear Asta Melid, Tripoli, Libya to determine the frequency of cutaneous leishmaniasis causes in western part of the country, frequency of leishmaniasis between male and female, the distribution of leishmaniasis causes in different area in Libya.

MATERIALS AND METHODS

Study Design

The study was a Cross-sectional study.

Study area

This study was designed to collect data from files of leishmaniasis patients follow in Dermatology Hospital Bear Asta Melid, Tripoli; the most of extra data were taken from medical staff when required**.**

Period of Study

The study data were collected from January 2014 to December 2015.

Data Statistical Analysis

The data was tested by using the Statview® version 5.0.1 software package (SAS Institute Inc., Abacus Concept, *Inc*., Berkeley, CA, USA). A *P* value of < 0.05 was considered significant.

Study Population, Design and Sample Size

The total of 258 samples were obtained from patient files visited dermatology clinic in Bear Asta Melid hospital during the period from the January 2014 to December 2015. All the patients were medically examined by consultant before start treatment. All the patients were counselled and informed about the study, and verbal consent was obtained from each patient to collect an anonymous questionnaire, which included personal and demographic data. The questionnaire was prepared and modified from National Centre for Disease Control (NCDC) leishmaniasis questionnaire for leishmaniasis clinics.

RESULTS

A total of 258 patients aged between four months and 97 years, all of them were clinically examined and diagnosed as leishmaniasis patient. Slide of slit and smear were taken from the each patient to support the clinical diagnosis and all slides were revealed that *L. major* was detected in all samples (Figure 1). The diagnosis was depended on the simple technique as microscopic or the use of clinical diagnosis by dermatologist. There was increase in cases number in 2015 (153) cases in comparison with 2014 (105) cases.

The highest number of leishmaniasis patients were recorded in autumn season (n=193, 74.8%), while in the winter season recorded patient were (n=33, 12.8%) and (n= 32, 12.4%) in the summer season. No cases were recorded in the spring season during the study period.

There were non-significant differences between male and female in the frequency in infection during the study period as percentage of infected female was 47%, and 53% male.

There are non-significant differences between age groups that infected with leishmania, as infection spreads between different in all the ages (Figure 2). In this study we reported that the most affected age group was 0-10 year group (27%) of total cases.

The most of cutaneous leishmaniasis cases were diagnosed in Jun (Figure 3), where the infection was in October (75%), September (50%, 45%, and 35% in November and December respectively. The previous data from Libya was found that Seasonal distribution of CL cases as reported by the Libyan National Centre for Infectious Diseases and Control (1995–2008), the highest peak was from November until February. Seasonal distribution of CL cases caused by *L.major* showing a peak from November until January and by *L.tropica* that peaked in February; these results are based on data collected from 1995 to 2008.

The place of infection were in different Libyan area. The most area that was place of infection was Alkamous (12%), Alhera (8%), Shaksouk (10%) and Ben walid was 5%. There were no relation between place of infection and address of infected person was live in. as most of infected person live in Janzor (11%), 10% in Traeq Almathar, 7% in Kikla, 5% in center of Tripoli and 4% in Draebi.

In this study both forms were reported, where the most of lesion was reported that dry sore lesion (about 247 lesion), where 10 lesions was wet lesion (Figure 4). The size of active lesion about 161/285 was less

than 1cm, and the 54 lesion was 1cm, the 43 cases had lesion less than 1cm. There are different types of lesions, 83 cases had the plaque lesion, where 64 as nodule and 60 as ulcer and plaque (Table 1).

All these factors as size of lesion and type of lesion effect on the course of treatment of the length of treatment as shown in this result that most of causes were treated in the short time within one-month complete recovery for 120 cases (Table 2) between one to three course of cryotherapy treatment (Table 3).

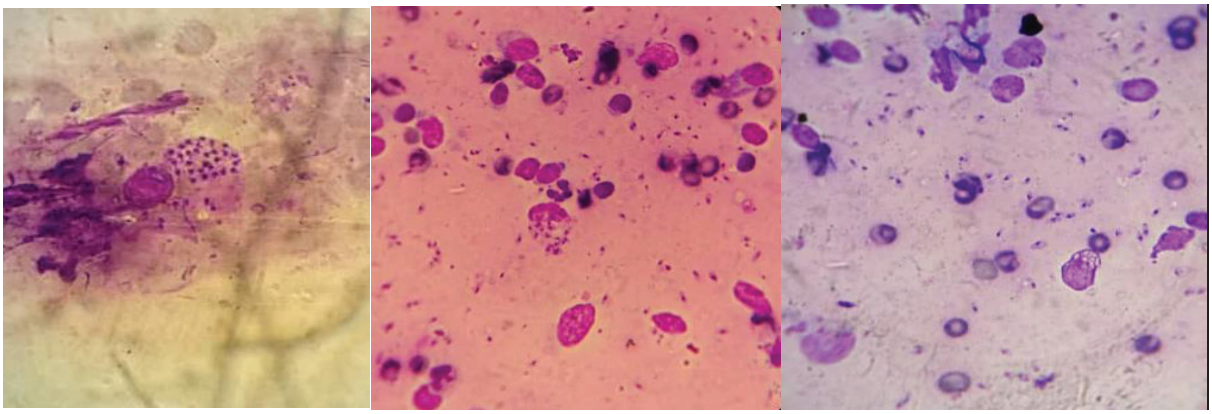

Figure 1: Microscopic picture of stained slit and smear clarify amastigote stage of *L. major*

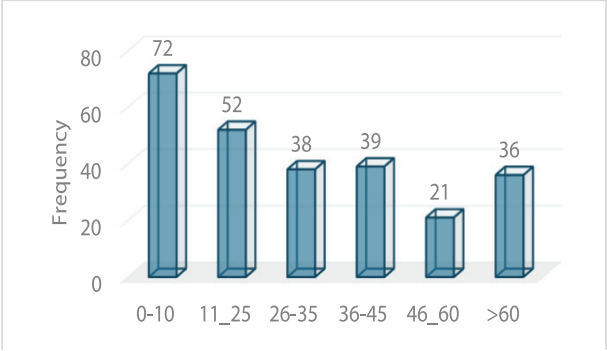

Figure 2: The frequency of cutaneous leishmaniasis cause by age.

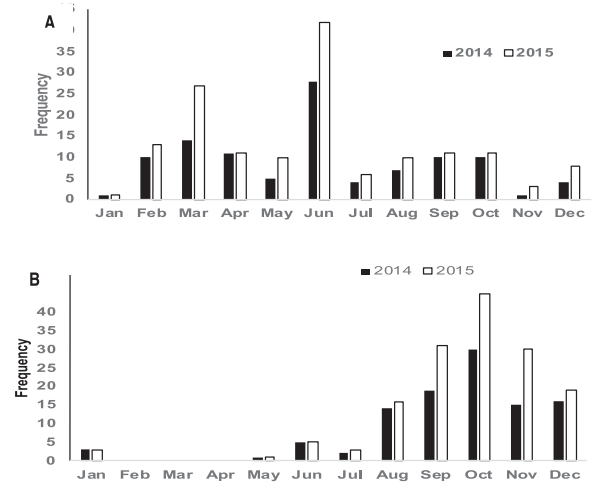

Figure 3: The frequency of time of diagnosis by month during 2014 and 2015 causes (A).

The frequency of time of infection by month during 2014 and 2015 causes (B).

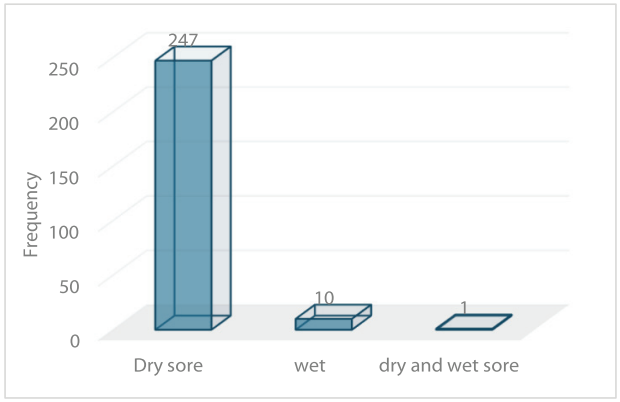

Figure 4: The frequency of leishmaniasis by clinical form of cutaneous lesion.

Table 1: the frequency of leishmaniasis by type of lesion

Type of lesion	*Frequency*
Nodule	64
Plaque	83
Ulcer	34
Nodule and Plaque	6
Ulcer and Plaque	4
Ulcer and Nodule	7
Ulcer, Nodule and Plaque	60

Table 2: The frequency of patients related to number of course treatment.

Number of course of treatment	*Frequency of patient*
1	67
2	42
3	32
4	29
5	19
6	11
7	15
8	6
9	9
>10	28

Table 3: The frequency of patients is related to long of treatment.

Month	*Frequency of patient(n)*
<1	25
1	120
2	68
3	10
4	7
5	4
6	4
> 6	20

DISCUSSION

The highest number of leishmaniasis patients was recorded in autumn season while in the winter season recorded patient were in the summer season. No cases were recorded in the spring season during the study period. This observation is similar to those found in endemic areas in southeast of Islamic Republic of Iran, where the highest rates of rural CL were found in autumn and winter.[12] However, our funding in this study was compatible to that described in study of seasonal patterns of leishmaniasis the north africa region which indicate that highest recored C.L cases were in the period from October to February, this due to the hibernal season of sand-fly is the spring season, with activity season extends June to September.[13]

There were non-significant differences between male and female in the frequency in infection during the study period. Similar to other studies that found there was no differences between male and female in infection with cutaneous leishmaniasis as in Isfahan, the prevalence of acute phase disease in males and females was equal in children and in adults.[14] However, the study in Iran found that there were significant differences in the rate of active lesions between males (92.0%) and females (8.0%), a male: female ratio of (11.5:1)[12] , whoever in our study was probably due to the cultural habits of the area, whereby women use well-covered dresses, which minimize the chances of sand fly bites.

There are non-significant differences between age groups that infected with leishmania, as infection spreads between different in all the ages. Also other study conducted in north-west Libya in 2012 found that CL is affecting all age groups in Libya[9], whoever, in our study we reported that the most affected age group was 0-10 year group. Our results were similar to those founded in Al-Badarna in Nalut, Libya there was most reported cases in 1-10 years age group.[15] This is can be explained by the outdoor activities of younger age group, subsequently they are more exposed to the infection occasionally[16], also children living in leishmaniasis endemic area are the most vulnerable individuals to be infected due to absence of immunity to leishmania parasite and no previous infection.[17]

The most of cutaneous leishmaniasis cases were diagnosed in Jun. The previous data from Libya was found that Seasonal distribution of CL cases as reported by the Libyan National Centre for Infectious Diseases and Control (1995–2008), the highest peak was from November until February. Seasonal distribution of CL cases caused by *L. major* showing a peak from November until January and by *L. tropica* that peaked in February; these results are based on data collected from 1995 to 2008. In Southern Pakistan the highest human cutaneous leishmaniasis disease prevalence was in April 2008 (518 cases) and lowest disease detections in June 2007 with 308 cases. In Western Pakistan the human disease prevalence was highest in October 2007 (281 cases) and lowest during Feb.2008 (66 cases).[18] The in Sir Lanka they found that higher CL incidence pattern seen in November in the past two years and in January 2012 correlates with monsoonal rainy seasons. The peaks seen in March 2011 could be attributed to delayed monsoons in 2011, The CL peak during July and August cannot be easily explained in

relation to rainfall. The mean time between appearance of symptoms and seeking advanced medical care was 7.3 months. This delay may explain the peak that occurs in July–August.[19]

The place of infection were in different Libyan area. The most area that was place of infection was Alkamous. There were no relation between place of infection and address of infected person was live in. as most of infected person live in Janzor, and in Traeq Al mathar. The travel to endemic are the main cause of infection as in Iran, a large majority of active cases were patients who had travelled to the endemic areas of the disease.[12] The 217/285 cases were in Urban area and the rest about 41 cases were in rural area.

In several studies classified CL based on clinical presentation and theoretical variations in *Leishmania spp*. that most they have divided CL into 2 major forms wet and dry, without considering the pathogenesis.[20] In our study both forms were reported, where most of lesion was reported that dry sore lesion. In Iran study found that, cases of dry sores were more common than wet sores. The size of active lesion about was less than 1cm. There are different types of lesions. In Iran study, the rate of active lesions on the upper limbs (69.3%) was significantly higher than that of ulcers in other locations. The second most frequent location was the lower limbs.[12]

All these factors as size of lesion and type of lesion effect on the course of treatment of the length of treatment as shown in this result that most of causes were treated in the short time within one-month complete recovery. The treatment of leishmaniasis depends on medical criteria and is based on the clinical-epidemiological evaluation of the patient, the country of origin, the species prevalent in the specific site and the levels of adaptation to available alternatives in each community.[21] The most therapeutic drug used in treatment of leishmaniasis are pentavalent antimonials and sodium stibogluconate that had adverse effect and very toxic drug.[21] Therefore, cryotherapy has been used for CL treatment. This stimulus produces decreases in the local tissue temperature and metabolism, which results in cryonecrosis that destroys the amastigotes and activates an immune response produced by the liberation of antigenic substances.

CONCLUSION

The frequency of infection was high in 2015 than 2014, increased by rate 1.5. The high frequency of infection was in Autumn than other season, that in October was higher infection rate. The high infection frequency in younger age group between 0-25 years. The conmen infection area were Trahouna, Al kamous, Kabow and Al heria. There was poor social awareness of the disease and of the availability of treatment in this sampled population. Most of the community considered sand fly biting as a nuisance of moderate intensity and dusk as the peak biting time. In conclusion, we recommended that more effective surveillance, case reporting, and control measures be implemented in high-risk areas.

ETHICAL APPROVAL

The study protocol was reviewed and approved by the Ethical Committees of National Authority for Scientific Research (NASR) of Libya in December 20113 by Health Ministry of Libya. All participants endorsed a written informed consent form.

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