



Epidemiological Features of Cutaneous Leishmaniasis in Zliten (North West of Libya)

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

Cutaneous Leishmaniasis is endemic in north-west of Libya for long time and it's spread to other new foci continues to involve new areas like Taurgha, Sirt and recently, Zliten. Most of the patients in north-west of Libya were infected with *zoonotic* Cutaneous Leishmaniasis, which caused by *leishmania major*, although some cases of *anthroponotic* cutaneous leishmaniasis caused by *leishmania tropica* were also reported. Zliten is a coastal city in the north west of Libya; with more than 289000 people; and now is known to be a new focus since 2016 when the sudden increase of the number of patients with Cutaneous Leishmaniasis had occurred.

Aims: This study was performed to observe epidemiological changes about incidence, age of patients, geographical distribution in Zliten city over a period of last 2 year (2017 and 2018).

Study Design: Cross-sectional study as retrospective study over time of two years, involving all patients, who were presented or referred, to get management of Cutaneous Leishmaniasis, in three accredited outpatient departments for cutaneous leishmania (in Zliten). The data were collected and analyzed in Zliten Teaching Hospital.

Place and Duration of Study: Outpatient Department of Dermatology and Venereology of Zliten Teaching Hospital between 1st January 2017 and 31st December 2018.

Methodology: The study included all patients (different gender and from all age groups) with Cutaneous Leishmaniasis, who sought medical advice in dermatology reference clinics in Zliten,

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over the period of 2 years (2017 and 2018). The main collected data were age, sex, number of lesions, and affected sites in the body, residency of the patients, year and month of presentation. The analysis of data was made with the use of Statistical Package for the Social Sciences (SPSS 25).

Results: Eight hundred thirty nine patients were included in this study. The majority of patients came from Zliten and these represented 95.6%, while the most of them came from Majer (south eastern part of Zliten City with more than 25000 people living in it) and represented 45.5% of total patients with CL included in this study, followed by Al-juma (south western part of Zliten with around 52000 people), represented (28%) of total patients with CL.

Males were found to be more affected, with male to female ratio, 2.4:1. The most affected age group were these less than forty with peak incidence at age group (20 yrs to 30 yrs). The registered patients in 2017 were 397, this number had increased slightly to be 440 in the following year (2018).

The distribution of patients had shown seasonal variations, with steep increase in the number of cases in December, November and January.

Conclusion: Cutaneous Leishmaniasis is remained to be a major health problem in Zliten, affecting a large number of population every year and need further study to determine molecular identification of parasites, and more efforts are needed to control the vector and reservoir.

Keywords: Zoonotic cutaneous leishmaniasis; anthroponotic cutaneous leishmaniasis; new focus; Zliten; seasonal variations.

1. INTRODUCTION

CL is the most common form of Leishmaniasis in North Africa, where the causative leishmania species are *Leishmania major*, *L. tropica* and the least frequent cause is *L. infantum* [1,2,3,4].

Two clinical types of CL are known; *Zoonotic cutaneous leishmaniasis* (ZCL) and *Anthroponotic cutaneous leishmaniasis* (ACL). ZCL is caused by *L. major* and *L. infantum*, while ACL is caused by *L. tropica* [5].

In North Africa, the main reservoirs for *L. major* are fat sand rat (*Psammomys obesus*) and *Meriones species* [6].

In the Mediterranean region, The principal vector for *L. major* is found to be *Phlebotomus papatasi* (*P. papatasi*), in the same time, *P. sergenti* is found to be the vector for *L. tropica* [7].

There were 12 countries found to be high burden countries for CL as mentioned in weekly epidemiological record of World Health Organization (WHO, 2016). The number of affected patient with CL in these countries were tripled over 7 years from 50000 in 1998 to more than 150000 registered patient in 2005. In 2014 the number has slightly decreased to less than 150000.

The high burden countries were Afghanistan, Pakistan, Iran, Saudi Arabia, Syria, Turkey,

Morocco, Algeria, Tunisia, Brazil, Colombia, and Peru.

In Tunisia, the total number of CL cases reported in 2014 was 3368, but underreporting was provided by many experts [8].

The countries of Mediterranean basin are known to be endemic area for CL, including our area extending from Morocco to Libya [9,10].

CL is found to be more prevalent in north-western region of Libya, and *L. major* is found to be the main species, followed by *L. tropica* [11].

Zliten as one of main coastal cities of Libya, has more 289000 residents, and is known to become a new endemic area since 2016 with marked increase of registered patients with CL [12,13]. This study was done to trace any changes in incidence, demographic or geographic distribution of CL in Zliten as new focus in North West of Libya.

2. METHODOLOGY

All of the patients with CL, who were either diagnosed after self-presentation or were referred to dermatology clinic of Zliten Teaching Hospital, Elhoriat clinic, and Teptept health centre which are the main dermatology clinics issued as reference clinics to treat cutaneous leishmaniasis in Zliten City.

The data of patients were analyzed with the use of SPSS software, version 25, to study distribution according to gender, age, residency, month and year of presentation as well as to analyze the number of lesions of CL and their distribution in different body sites.

3. RESULTS AND DISCUSSION

Eight hundred thirty nine patients were registered over a period of two years, started 1st Jan. 2017 and ended 31th December 2018. Most of them came from different geographical areas of Zliten.

Male to female ratio was 2.4:1. The most affected age groups were these less than forty years with peak prevalence at age group from 20 years to 29 years, on the other hand, clear

declining of cutaneous leishmaniasis after forty years of age was noted.

Three hundred and ninety seven (397) patients were registered in 2017 and the number of new cases continued to increase to be four hundred and forty (440) patients in the following year, 2018.

The majority of patients came from Majer, which represents a wide area of rural areas in south east and south of the City (Fig. 1).

The distribution of cases had shown seasonal variations with peak incidence at December, which represented 23% of total cases, followed by November and January with the percentage of 19.8% and 19.2% respectively (Fig. 2).

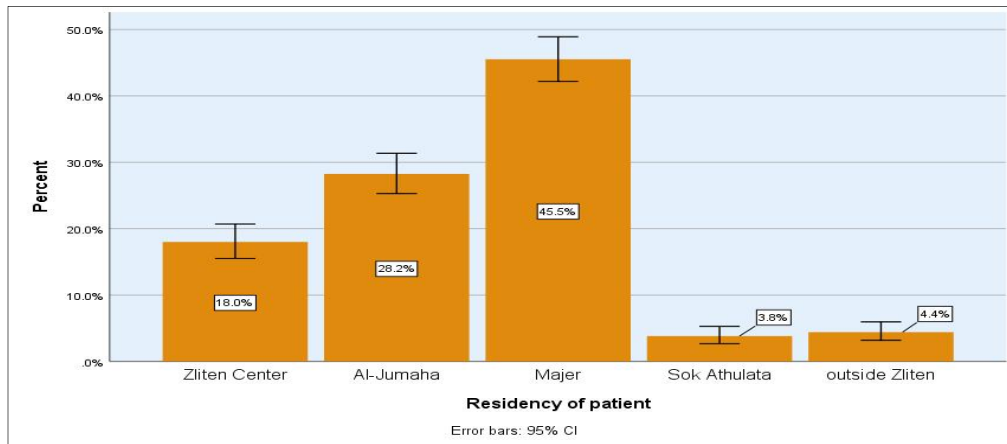


Fig. 1. Distribution of patients according to their residency

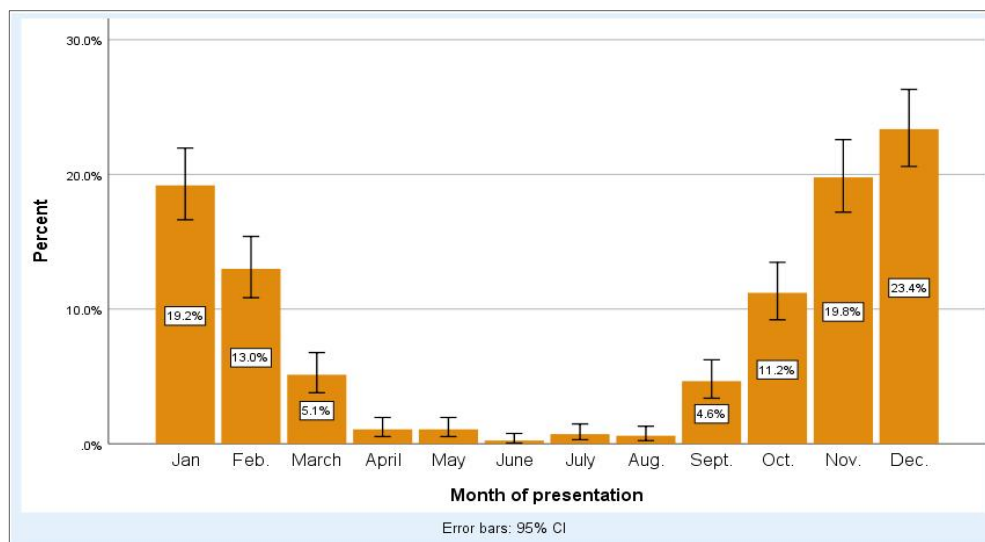


Fig. 2. Distribution of patients according to season

The majority of the patients (83%) had their lesions on extremities (Fig. 3).

The incidence of CL in North Africa (Algeria, Libya, Morocco, and Tunisia) was reported to be high, which was more than thousands of cases, so CL to be considered a serious health problem with negative psycho-social impact in these countries.

In Zliten, Males remained to be more affected than females with slight increase of prevalence among females, that the endemic areas are mainly rural areas and located far from residential areas where families are living. The men were more frequently infected than women because the men in our localities doing more entertainment activities (e.g. picnic and camping) and working activities (like agriculture and shepherd) in endemic rural areas.

The most affected age group remained to be between 20-30 years with slight increase of prevalence in age groups below 20 years, from about 25% of total cases in previous years into more than 33% in last two studied years (2017, 2018) [12]. This increase of affection of young people seemed to be explained by the increase of incidence of CL in more densely inhabitant areas of Zliten like Majer, which represents south eastern district of Zliten City.

Seasonal distribution of cases in 2017 and 2018 remained the same compared into the previous years from 2011 up to the end of 2016 with peak incidence at December, this is similar to what was found in wide areas of north west of Libya,

where *L. major* was found to be the cause of CL [11,12].

On the other hand, in previous studies, *L. tropica* was found to had less clear seasonal variation compared into *L. major*, with peak incidence of *L. tropica* in January and February.

The usual clinical presentation is the appearance of one or more lesions on exposed parts of the body. The typical lesion starts as a papule which enlarges in size to become a plaque or a nodule, while the lesion increases in size, it ulcerates and builds up a crusty material [14] (Fig. 4).

Furthermore, lymphatic spread with sporothricoid leishmaniasis were also frequently seen.

In our study, about 5% of total cases had more than 10 lesions with one patient had more than 40 lesions, who was young male, not immune-compromised, and working as security member with night duties in highly endemic area (Majer). The patients with multiple and large number of CL lesions are difficult to treat, as well as patients with unbalance diabetes mellitus, advanced age and cardiac diseases.

Increasing affected number of small children put medical staff in front of the real challenge that needs more facilities and better trained doctors and nurses to be able to manage children with painful ulcerations and also to be able to use some invasive therapies (like intralesional Pentostam and Cryotherapy) when needed (Fig. 5).

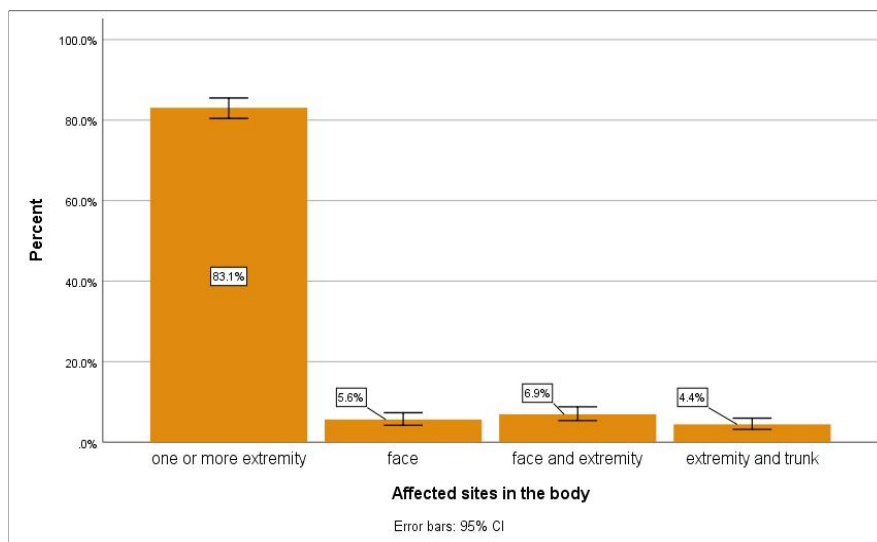


Fig. 3. Distribution of CL lesions in different body sites



Fig. 4. a and b patients with multiple ulcerated plaques on extremities. 4c small red brown plaque of CL on forearm. 4d. large ulcerated plaque of CL on extensor surface of knee

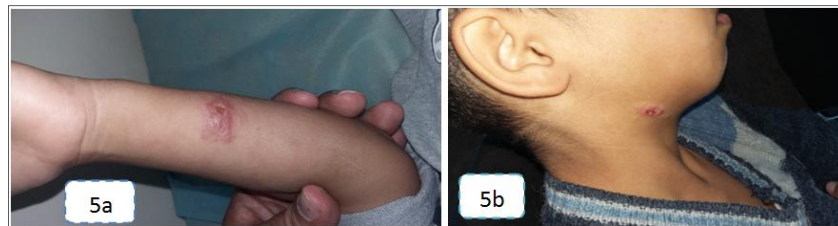


Fig. 5. (5a) an ulcerated plaque of CL on forearm of child. (5b) an ulcerated small plaque in child with CL at right anterior upper part of neck

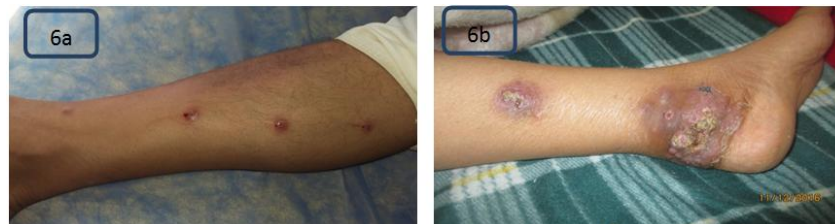


Fig. 6. (6a) a linear arrangement of CL lesions with nodular lymphangitis. (6b) Mycetoma like CL lesion at ankle region of elderly woman with proximal lesion of lymphatic spread

Unusual clinical presentation is well known, and may complicate the situation, making diagnosis to be sometimes difficult or even to be missed. The nodular lymphangitis is seen more frequently with immunosuppression and in elderly (Fig.6).

Unusual presentation and the need for systemic treatment with Pentavalent Antimonials, which is sometimes known to have serious side effects, both make laboratory confirmation a mandatory step ethically and medicolegally.

As it is well known that, CL is not life-threatening condition, the treatment approach should include safe medications and therapies like thermo-therapy and cryotherapy with or without intra-

lesional Pentostam [14]. On the other hand, CL could cause mutilating scarring on exposed parts of skin which may cause negative social and psychological impacts. In Zliten Teaching Hospital, the dose of antimonials (Pentostam) to be given systematically at 10-20 mg/ kg body weight, with a maximum dose of 8.5 ml/ day, to be given intra-muscular over a period of 20 days [15]. When systemic therapy with Pentavalent Antimonials was contraindicated because of age (more than 50 yrs) or because of cardiovascular disease, oral fluconazole 150 mg/ day was given for about 4-6 weeks, but allergy and drug interactions should be considered. While the alternative to Pentavalent Antimonials (in Tripoli Central Hospital) were oral rifampicin (600 mg/day) and isoniazide (300 mg/day) [11,15].

4. CONCLUSION

CL in Zliten; as one of large cities in North West of Libya; was remained to be a major and increasing health problem and affecting more children and female patients each year, and molecular identification is mandatory to determine the more suitable protective measures and therapeutic regimens.

CONSENT

It is not applicable.

ETHICAL APPROVAL

The study design and protocols were reviewed and approved by Ethical Committee of Zliten teaching hospital.

COMPETING INTERESTS

Authors have declared that No competing interests exist.

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