Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/13687
DOI URL: http://dx.doi.org/10.21474/IJAR01/13687

RESEARCH ARTICLE

EPIDEMIOLOGICAL, CLINICAL AND THERAPEUTIC PROFILE OF CUTANEOUS LEISHMANIASIS IN THE PROVINCE OF ESSAOUIRA-MOROCCO

Loubna Darfaoui[1], Meriem Sahm[1], Zakarya Ait Lahcen[2], Mohamed Ratbi[2], Redouane Moutaj[1] and El. Mostafa El. Mezouari[1]

1. Faculty of Medicine and Pharmacy, Cadi AAYAD University, Marrakesh, Morocco.
2. Provincial Health Delegation from Essaouira.

Manuscript Info

Manuscript History
Received: 31 August 2021
Final Accepted: 30 September 2021
Published: October 2021

Abstract

Leishmaniasis is a group of parasitic, tropical diseases caused by flagellate protozoa belonging to the genus Leishmania. These parasites affect several mammalian species, including man, to which they are transmitted by the bite of an insect vector, the sandfly. They are widespread in many countries, including the countries of the Mediterranean region. In Morocco, it is a persistent public health problem despite the development and implementation of a control program. Our work is a retroprospective study of leishmaniasis cases observed in the Essaouira province over a period of 5 years (from 01/10/2016 to 31/12/2020). The objective of this study is to develop the epidemiological, clinical and therapeutic profile of this disease with an analytical comparison with other works and researches. 598 cases of cutaneous leishmaniasis were collected and no cases of visceral leishmaniasis. The age group most affected by cutaneous leishmaniasis is the one between 0-5 years old with 147 cases (25.00%) with an average age of 22.70 years. Similarly, a predominance of the female sex was observed with 58.19% of females versus 41.80% of males. The majority of cases were recorded in rural areas. The commune most affected is El-hanchan with a total of 149 cases, or 24.92% of the total cases observed. The epidemiological profile of leishmaniasis in Morocco seems to be gradually reached that of Mediterranean countries characterized by an increase in the number of cases and the emergence of new homes so far free of the parasite. Hence, the need for actions to combat well codified and adapted to different types of leishmaniasis. The measures undertaken in the framework of control program established in Morocco, have been evaluated on a permanent basis in order to develop and adapt them to the evolution of leishmaniasis in the province.

Introduction:-

Leishmaniasis is an infectious disease caused by parasitism of cells of the mononuclear phagocyte system by flagellate protozoa belonging to the genus Leishmania, transmitted by dipteran insects belonging to the genus Phlebotomus [1].

Corresponding Author:- Loubna Darfaoui
Address:- Faculty of Medicine and Pharmacy, Cadi AAYAD University, Marrakesh, Morocco.

According to WHO, leishmaniasis is a neglected tropical disease. Endemic in 97 countries, it affects 12 million people and 370 million people are at risk of the disease [2]. In Morocco, leishmaniasis is a public health problem. Hence the interest of our work which is to evaluate the epidemiological, diagnostic, and therapeutic profile of leishmaniasis in the province of Essaouira through cases recorded at the service of the networks of health institutions in this region during the period 2016-2020.

Methodology:-

Study Location:

The province of Essaouira is a predominantly rural subdivision of the Moroccan region of Marrakech-Safi.

The climate is semi-arid with a significant dry period from six to seven months. The average temperature of the city of Essaouira is 16.7°C. The average rainfall of the province is 342 mm/year.

The population is estimated at 446,979 inhabitants according to the 2014 national census. Rural people represent 77.6% of the population equivalent to 337,672 inhabitants, compared to 22.4% who live in urban areas equal to 109,307 inhabitants. Young people constitute the largest part of the population [3].

Study method:-

This is a retrospective study, carried out between public hospital structures, health centers and from screening and diagnostic activities performed by the provincial infrastructure and ambulatory activities service over a period of 5 years, from 01/01/2016 to 31/12/2020.

Our study included all cases of Leishmaniasis who resided or stayed in the province of Essaouira for a long period of time.

Positive diagnosis:

In cutaneous leishmaniasis, the sample is taken at the inflammatory border of the lesion. After removing the crusts, a sterile vaccynostyle is used to collect the serosities. The collected product is spread on a slide and stained with May GrunWald Giemsa stain and then read under a light microscope objective 100. A positive cutaneous leishmaniasis is confirmed if the amastigote form is observed in the interior or extra cellular.

The diagnosis of cutaneous leishmaniasis was retained in our study:

1. After demonstration of the amastigote form of the parasite on a skin sample of the suspected lesion:
2. And in front of a typical clinical presentation with negative parasitological examination and a good evolution under anti leishmanial treatment.

Data collection:

The results were collected from the registers elaborated by the provincial delegation of the Ministry of Health in Essaouira,

The parameters studied were: number of cases, age of the patient, sex, rural or urban geographical origin, commune of origin, date of diagnosis, type of diagnosis (clinical/biological), nature of screening (active/passive) and parasitological examination.

Results:-

During the study period, 598 cases of cutaneous leishmaniasis (CL) were diagnosed, and no cases of visceral leishmaniasis.

In our study, the average age was 22.7 years with extremes ranging from 1 year to 80 years. The number of pediatric cases (less than or equal to 15 years) represented 56% of all cases. There was also a predominance of females (58.19%). The dominant age range for both sexes was 0 to 5 years.

The annual average was 119.6 cases/year (figure 1) and the rural area was the most affected with a percentage of 68.56%.

The cutaneous leishmaniasis in our study had a spring character. The recorded cases are diagnosed mostly in April and May (figure 2).

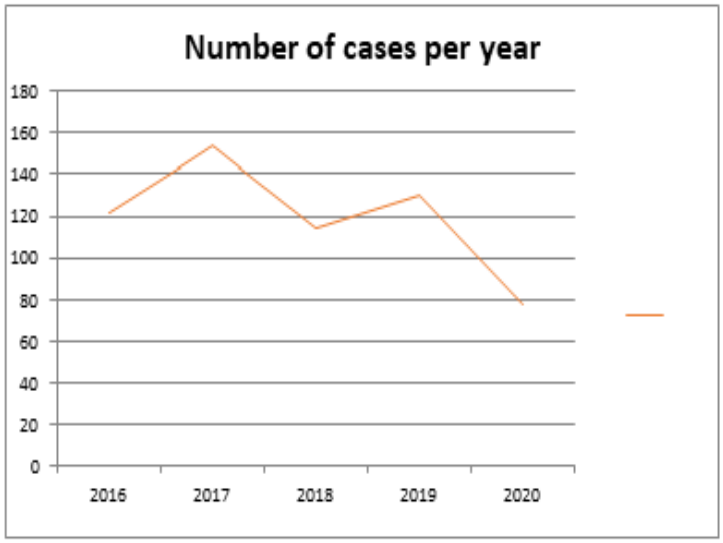

Figure 1: Distribution of LC cases per year in Essaouira province between 2016 and 2020.

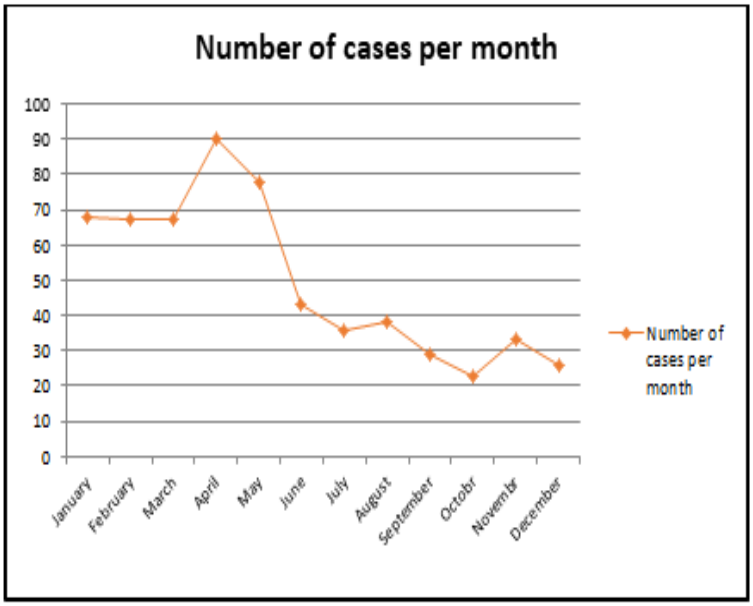

Figure 2: Distribution of LC cases by month in Essaouira province between 2016 and 2020.

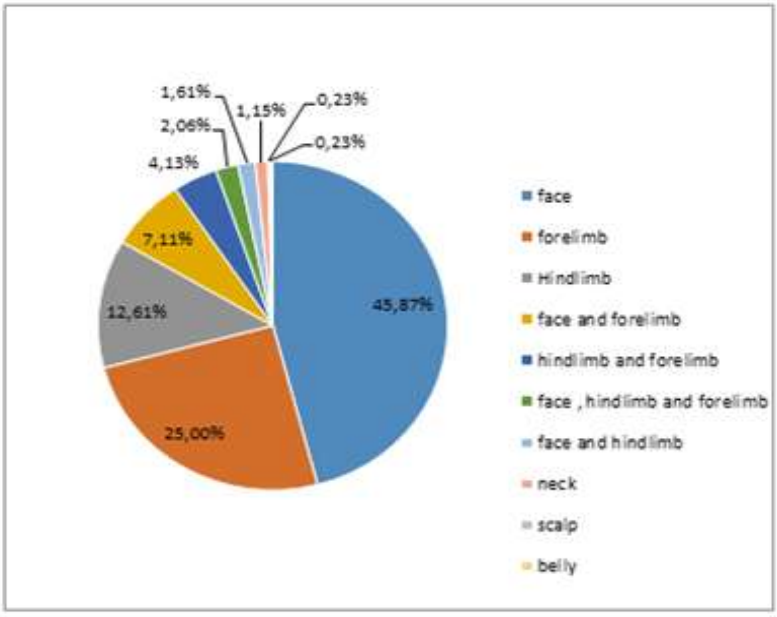

Figure 3: Distribution of cases by site.

Figure 4: Multiple LC lesions in the forearm

Figure 5: A single LC lesion in the forehead.

Figure 6: 2 nodular LC lesions in the neck.

We were able to collect clinical data from 436 cases only; 62.61% of them had presented a single lesion against 37.39% with multiple lesions (Table 1). The skin lesions were mainly located in the exposed areas, with the face affected in 45.87% of cases, followed by the upper limbs (Figure 3, 4, 5, 6). Lesions less than 4 cm in diameter were the most frequent with a percentage of 98.17% (Table 2).

A skin sample with parasitological study was taken for all patients, i.e. 598 samples of which 370 were positive.

Regarding treatment, all patients were under antiseptic treatment (eosin or Betadine) and local antibiotics (Aureomycin 3% ...) from the first consultation until complete healing.
In addition to local care,

1. 345 cases received injection of Glucantime: 1 to 3 ml per session, twice a week until complete healing.
2. 39 patients aged 15 years or younger were treated with oral clarithromycin at a dose of 15 mg/kg/d in two doses, 10 days/month for 3 months.
3. Systemic Glucantime at a dose of 20 mg/kg/day, not to exceed 850 mg/day, was given to 18 cases with multiple lesions (more than 5 lesions), or a peri-orificial lesion.

Glucantime was generally well tolerated, with no adverse events reported in patients.

Complete healing was generally achieved within 8 weeks. Unsightly, atrophic or hyperpigmented scarring was the usual course in all patients.

One case presented a resistance to the treatment during our study and was then referred to the dermatological service of CHP Essaouira; 2 cases were lost to follow-up.

Discussion:-

Leishmaniasis is a public health problem in our country; hence the importance of analyzing the epidemiological situation and emerging risk factors to maintain a high level of surveillance.

The Leishmania species responsible for cutaneous leishmaniasis in Morocco are Leishmania major, Leishmania tropica and Leishmania infauntum. Cutaneous Leishmaniasis (CL) caused by L. major has been reported since 1914. Previously sporadic, it has become epidemic since 1976. It manifests itself in unpredictable epidemics [4]. The province of Essaouira is among the first areas of cutaneous leishmaniasis caused by L. tropica in Morocco [5].in 2003 only 18cases were recorded, 22 cases in 2005 and then 90 cases in 2008 [6,7].

During the 5 years of our study (2016-2020) 598 cases were recorded. The high number of cases may be due to the population's awareness of the disease, and the proximity of health centers.

The region of Essaouira is generally rural, poor, with an activity based essentially on agriculture, which favors the spread of leishmaniasis. In addition to these factors, the type of local vegetation (Thuja (Tetraclinis articulata), Junipers (Juniperus spp), Argan (Argania spinosa) and Jujube (Ziziphus lotus)[6,7]. These same conditions explain the frequency of CL in rural areas more than urban areas in our study.

The evolution of CL during the study period has seen a decrease of cases in 2020. This success is the result of multiple efforts made by the provincial health delegation, as well as the medical and paramedical staff. In particular, the realization of medical caravan for screening, the sensitization of the population and the therapeutic protocols instituted [4].

In 2020, Nerida Nadia H. Valero and María Uriarte conducted a study on the different socio-economic and demographic factors that can influence the geographical distribution of Leishmaniasis. Among these factors: the construction of houses with straw and mud, water supply, sewage system, wastewater, the presence of pets and livestock that serve as shelter for vectors [8].

The patient's background also plays a role in the occurrence of this pathology, namely comorbidities, malnutrition and immunosuppression [9,10]. Some professions are at risk, such as agriculture, hunting, military and mining activities. As well as failure to follow preventive measures: sleeping outside without protection and without a mosquito net.

A Moroccan study published in 2016 about cutaneous and visceral leishmaniasis showed that all age groups can be affected with predominance between 0 and 4 years. These statistical data are consistent with our results where the pediatric population is the most affected [5]. Children have a low immunity and reduced defenses against leishmania, especially L. Tropica [11]. In Tunisia, CL in children represents 25% of all cases [12].

According to our study, the female sex is more affected 58.19%. This result is in agreement with that reported in other Moroccan regions: sex ratio M/F in Chichaoua : 0.8, Sefrou : 0.69, Azilal : 0.9 [11;13]. This may be due to the fact that women, for aesthetic reasons, consult health centers more frequently than men. In addition, girls are involved in domestic activities and thus remain in prolonged contact with leishmaniasis vectors. Men, because of the neglect of painless skin lesions, rarely or only consult in case of complications.

Concerning the distribution over the months of the year. Cutaneous leishmaniasis in our study is observed throughout the year with a clear increase of cases during the months of April and May. The silent incubation of the disease from a few weeks to a few months and the climatic conditions during this season explains the significant emergence of lesions in spring. This spring character has also been noted in other regions in Morocco [11].

Cutaneous leishmaniasis in Morocco is caused by three species of leishmania : L. major, L. tropica and L. infantum. The clinical presentation of these species is different. In our study, the clinical aspects were in favor of anthroponotic leishmaniasis caused by L. tropica for all 598 reported cases. The skin lesion was small, dry and painless, starting as a red papule covered by a crust and then infiltrating and ulcerating. 98% of our patients had lesions with a diameter less than 4 cm. Similar clinical descriptions were reported in several other studies : Tetouan (62%), Taza (99.5%) and Sefrou (92.1%) [13].

The lesion is usually unique and localized in the open areas (site of inoculation of the parasite). Several studies published in the literature confirm that CL is often manifested by a single lesion [14]. Some patients may have up to hundreds or even thousands of lesions without sparing anybody segment [15].

Diagnosis and treatment of CL should be early for rapid healing and reduction of transmission of the antroponotic parasite. The choice of treatment depends on the severity of the disease, the patient's condition, concomitant diseases, the infecting parasite species, and the geographical location.

Abstention from treatment is rarely recommended because of the unaesthetic localization of the lesions in the visible parts of the body, their long duration of evolution and the indelible scars they may leave. In our study, all patients were treated with antiseptics and local antibiotics in order to avoid superinfection of the lesions and consequently delay healing.

In association with the antiseptic treatment, Glucantime (meglumine antimoniate) was the treatment of first choice. It is the reference treatment for all forms of leishmaniasis worldwide and nationally. It is very effective but can induce several side effects sometimes very serious.

In EL-hanchan, the first choice treatment for children was clarithromycin. It is an antibiotic of the macrolide family. It is not yet well described in the treatment of leishmaniasis. Its interest in children was the objective of a thesis in 2016, clinical and parasitological cure was obtained in 96.5% [15].

Conclusion:-

The region of Essaouira in Morocco continues to record significant numbers of cutaneous leishmaniasis. It evolves in a hypo-endemic form with a reduced number of cases and sometimes with epidemic outbreaks. The evolution during the last year has known a decrease of cases thanks to the screening campaigns and the sensitization of the population on the means of prevention of this disease.

Conflicts Of Interest:
None.

Acknowledgement:-

to all the medical and paramedical staff operating in the province of Essaouira.

Tables

Table 1: Distribition of cases by number of lesions.

Number of lesions	Number of patients	Percentage
1 lésion	273	62,61%
2 lésions	71	16,28%
3 lésions	34	7,80%
4 lésions	30	6,88%
5 lésions	10	2,29%
>5 lésions	18	4,13%
Total	436	100%

Table 2: Distribution of cases by the diameter of the largest lesion

Diameter of the largest lesion	Number of patients	pertentage
Lésion <4 cm	428	98,17%
Lésion >4 cm	8	1,83%
Total	436	100%

References:-

[1] Mokni M. Leishmanioses cutanées. Ann Dermatol Venereol 2019;146(3):232-246.
[2] WORLD HEALTH ORGANIZATION. Global leishmaniasis update, 2006–2015: a turning point in leishmaniasis surveillance. Wkly Epidemiol Rec 2017;92(38):557-565.
[3] Agence urbaine d'Essaouira. Champs d'action. Centre de documation, 2019:1. Disponible sur : (https://auessaouira.ma/meilleur-agence-urbaine/champs-d-action/).
[4] El Alem MMM, Hakkour M, Hmamouch A, Halhali M, Delouane B, Habbari K, et al. Risk factors and prediction analysis of cutaneous leishmaniasis due to Leishmania tropica in Southwestern Morocco. Infect Genet Evol. 2018;61:84-91.
[5] Es-Sette N, Ajaoud M, Charrel RN, Lemrani M. Épidémiologie moléculaire des phlebovirus dans quatre provinces du Maroc. Bull Soc Pathol Exot. 2016;109(3):143-150.
[6] Yahia H, Ready PD, Hamdani A, Testa JM, Guessous-Idrissi N. Regional genetic differentiation of Phlebotomus sergenti in three Moroccan foci of cutaneous leishmaniasis caused by Leishmania tropica. Parasite. 2004;11(2):189-199.
[7] Es-Sette N, Ajaoud M, Bichaud L, Hamdi S, Mellouki F, Charrel RN, et al. Phlebotomus sergenti a common vector of Leishmania tropica and Toscana virus in Morocco. J Vector Borne Dis. 2014 Jun;51(2):86-90.
[8] Valero NNH, Uriarte M. Environmental and socioeconomic risk factors associated with visceral and cutaneous leishmaniasis : a systematic review. Parasitol Res. 2020;119(2):365-384.
[9] Akuffo H, Costa C, van Griensven J, Burza S, Moreno J, Herrero M. New insights into leishmaniasis in the immunosuppressed. PLoS Negl Trop Dis. 2018;12(5):e0006375.
[10] Reithinger R, Dujardin JC, Louzir H, Pirmez C, Alexander B, Brooker S. Cutaneous leishmaniasis. Lancet Infect Dis 2007;7(9):581-596.
[11] Abou-Elaaz FZ, Outourakht A, Bouhout S, Himmi O, Guernaoui S. Thirty years of cutaneous leishmaniasis in Tadla-Azilal focus, Morocco.Parasite Epidemiol Control. 2019;4:e00091.
[12] Chraiet-Rezgani K, Bouafif-Ben Alaya N, Habboul Z, Hajjej Y, Aoun K. Aspects épidémiologiques et cliniques de la leishmaniose cutanée à Kairouan-Tunisie et particularités chez l'enfant. Bull Soc Pathol Exot. 2016;109(2):80-83 [19] Achour Barchiche N, Madiou M. Recrudescence des leishmanioses cutanées : à propos de 213 cas dans la wilaya de Tizi-Ouzou. Pathologie Biologie 2009;57(1):65–70.
[13] Talbi FZ, El Khayyat F, El Omari H, Maniar S, Fadil M, Taroq A, et al. Cartography and Epidemiological Study of Leishmaniasis Disease in Sefrou Province (2007-2010), Central North of Morocco. Interdiscip Perspect Infect Dis. 2020;2020:1867651.
[14] Moein D, Masoud D, Saeed M, Abbas D. Epidemiological Aspects of
Cutaneous Leishmaniasis during 2009-2016 in Kashan City, Central Iran. Korean J Parasitol 2018;56(1):21-24.
[15] Galgamuwa LS, Dharmaratne SD, Iddawela D. Leishmaniasis in Sri Lanka: spatial distribution and seasonal variations from 2009 to 2016. Parasit Vectors 2018;11(1):60.