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CLINICAL STUDY

Prevalence of Cutaneous Leishmaniasis in Khartoum State-Sudan

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Cutaneous leishmaniasis is the known form of leishmaniasis affecting humans. It is a skin infection caused by protozoan parasite *Leishmania* from animals to human by the bite of a vector phlebotomine sand fly. About 21 species causing leishmaniasis depending on geographical distribution and host immunity. Population of northern areas of Sudan are commonly affected by the disease.

KEYWORDS: Leishmaniasis; Sudanese Patients: Khartoum State.**Correspondence:** Dr Wahaj Muawya. Department of Parasitology and Medical Entomology, Faculty of Medical Laboratory Sciences, Shendi University, Sudan. Email: dr.wahaj2017@gmail.com**Copyright © 2021 Muawya W et al.** This is an open access article distributed under the [Creative Commons Attribution 4.0 International](https://creativecommons.org/licenses/by/4.0/), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.**INTRODUCTION**

Cutaneous leishmaniasis (CL) is an endemic disease in the middle east and north Africa including Sudan, Yemen, Egypt, Libya, Jordan, Tunisia and Palestine are endemic mainly for the zoonotic cutaneous leishmaniasis while Syria, Saudi Arabia, Iraq and Iran are endemic for both zoonotic and arthropodic cutaneous leishmaniasis. Leishmaniasis is one of the most neglected tropical diseases, yet it is associated with high mortality and morbidity [1]. Some 350 million people are at risk of becoming infected worldwide, while disease incidences estimated at 2 million new cases every year [2]. Initial symptoms include skin lesions, which develop after several weeks or months after being infected, and swollen glands. The lesions – closed or open sores – can change overtime in size and appearance. They are usually painless but can become painful if infected with bacteria. The lesions can take a long time to heal and usually leave scarring [3]. CL is responsible for chronic and disfiguring skin lesions resulting in morbidity and social stigma [4].

The first indigenous case of Cutaneous leishmaniasis in Sudan was diagnosed by Archibald in 1911 in a boy from Nuba Mountains in Western Sudan [5].

Ever since sporadic cases were reported at different times by various authors from Kordofan, Darfur, Kassala, the Blue Nile and Upper Nile provinces [6].

Two epidemics occurred in the 1970s and 1980s in the Nile and Khartoum state respectively. Since then the disease

spread northwards and southwards along the Nile and now is endemic in these areas [6].

MATERIALS AND METHODS**Study Area**

The study was carried out at the Department of parasitology {National Health Laboratory Khartoum} during (February to June (2009)). The study population consisted of patients with ulcers or lesions suspected to be cutaneous leishmaniasis. As such diagnostic service is available in a few centers a number of these patients came from the different areas around Khartoum.

Samples

Forty patients aged range from (15 to 45) were recruited to the study males and females after obtaining the consent from each patient, a questionnaire form was filled for each patient {Name, Sex, age and Skin lesion} and other relevant clinical information such as the history of disease, duration and number of swellings or ulcers using a scalped blade or the edge of a glass slide.

2.3 smear test: -

Smears were taken from each patient for laboratory investigations. The criterion for selection was based on the presence of nodular, nodulo ulcerative, ulcerative lesions. The new recent lesion was selected, cleared with alcohol. From the nodular edge and with the other edge of the slide smears were made. Some patients have ulcers covered with tetracycline or other drugs, which needed to

be cleaned for two to three days by normal saline, and then on the fourth days were made Smears, were air-dried, fixed with 70 % methanol for thirty seconds and stained with 10 % Giemsa stain for ten minutes.

Data Analysis

All data were collected in data collection form and analyzed with standard tests including frequencies and percentage using the statistical package for the social sciences SPSS version 220.

RESULTS AND DISCUSSION

Leishmania is one of the six diseases selected by the WHO for its special program for Research and training in tropical disease and is one of the major public health problems in the world (8) since its first discovery in the Sudan in 1907, cutaneous leishmaniasis was known to be an endemic disease in western Sudan with occasional sporadic cases in other parts of the country. It is well known that when comparing different parasitological techniques, the gold standard is the direct method where the stage of the parasite can be seen directly.

Under the microscope. Here, we have the direct smear method in which the amastigotes of Leishmania major are observed in stained smears.

The study comprised 40 participants, most of them were males (25) while female (15). The infection was distributed over all age group from (15 -45). The physical examination revealed that overall percent of participants who had either scar, lesion, or both was 32.5% of the total population. Regarding gender, it was more prevalent in males than female. The overall prevalence of CL positivity was 32.5% (table1) and the reaction was prevalent within the participant who living in urban more than rural areas (table 3).

In this study (forty) patients using direct smear method 13 (32.5%) was found to be infected with cutaneous leishmaniasis (Table1) while Al-hassan et al. reported result regarding scar and lesion, 1st positivity was higher than that of current study [7], also Kadaro et al. applied 1st survey along river Nile north of Khartoum where CL is prevalent and found 94% of the population positively reacted [8].

the disease has affected immunologically naïve population as well as affected all age groups and this result is disagreement with that of Weigle, Santrich in Colombia, in which the author performed on 2656 participant and found that positivity increased gradually with age starting from age group 0-5 years old, with 0.6% reaching a constant level 21% at age 30 years [9].

Table (1): Distribution of CL according to Gender.

SEXES	Number Examine	Number Infected	Percentage
Males	25	10	40%
Females	15	3	20%
Total	40	13	32.5%

Table (2): Distribution of CL According to Age Group.

Age	Number Examined	Number Positive	Percentage
15 – 20	19	3	15.8%
21 – 25	14	3	21.4%
26 – 30	3	3	100%
31 – 35	2	2	100%
36 – 40	1	1	100%
41 – 45	1	1	100%
TOTAL	40	13	32.5%

Table (3): Distribution of CL according to Areas.

Distribution	Number Examined	Number Positive	Percentage
Rural	2	2	6.6%
Urban	28	13	36.6%
Total	30	13	43%

CONCLUSION

Thus, it seems that from the small number of patients we can draw the following conclusions:

Although cutaneous leishmaniasis has been a rural disease endemic only in the arid and desert of western Sudan, it has succeeded, due to environmental, climatic and economic factors, in establishing itself firmly as an endemic disease in central Sudan. Males were affected more than females and most lesions were found on the exposed parts of the body with different numbers of lesions and a clinical picture typical of leishmania major infection, This may be due to social habits.

AUTHORS' CONTRIBUTIONS

The participation of each author corresponds to the criteria of authorship and contributorship emphasized in the [Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly work in Medical Journals of the International Committee of Medical Journal Editors](#).

COMPETING INTERESTS

The authors declare no competing interests with this case.

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