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Effect of cutaneous leishmaniasis on hematological and immunological parameters in children/Iraq

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ABSTRACT

Leishmaniasis is a widespread tropical infectious disease. It is endemic to Asia, Africa, and worldwide. The current study aims to follow up immune changes and hematological parameter that cutaneous leishmaniasis in children with accompany infection. 70 samples were collected from children with cutaneous leishmaniasis who arrived at Diwaniyah Teaching Hospital.

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KEYWORDS

Leishmaniasis. Cutaneous leishmaniasis. Children

INTRODUCTION

Leishmaniasis one of the important diseases for humans, which is caused by a hemoflagellate protozoan parasite of the Leishmania genus. *Leishmania* parasite two forms during its life cycle Promastigote form It is seen in females of *Phlebotomus* (sand fly) Reithinger *et al*.,(2007) (WHO, 2017), Amastigote form It is found in humans and storing hosts and lives inside macrophages in the skin, mucous membranes, lymph nodes, bone marrow and spleen. (Akhoundi *et al*., 2016).

Cutaneous leishmaniasis appears in two types, the first Zoonotic Cutaneous Leishmaniasis (ZCL) It is caused by a parasite *L. major And it appears in rural areas* (Blum *et al*., 2012) . and Anthroponotic Cutaneous Leishmaniasis (ACL) Leishmaniasis is a parasitic disease characterized by different clinical manifestations depending on patient immune response and causative species Alexander *et al*.,(1999);Karamian *et al*.,(2016)

MATERIAL AND METHODS

Samples Collection

70 samples were collected from infected children (35 males and 35 females) with a control group (15 males and 15 females)**.**

Leishmaniasis samples were collected from the edge of ulcers before treatment for patients with cutaneous leishmaniasis, and arrivals to Diwaniyah Teaching Hospital**.**

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Diagnosis of Samples

Clinical diagnosis

Clinical diagnosis was made by a dermatologist.

Laboratory diagnosis:

The direct smear method prepared from the edge of a pigmented ulcer using Giemsa was used and examined by a high-strength microscope using an oil immersion. Arfan and Rahman.(2006).

Samples of blood drawn from a vein were placed in anticoagulant test tubes for Assay. Younes,(2018).

Immunoassay was used to detect parasite-specific antibodies (Dipstick) in the serum. Schallig *et al*.,(2004).

RESULTS & DISCUSSION

Fig(1) Distribution of ulcers on parts of the body for children with cutaneous leishmaniasis

Table (1) Distribution of infection according to age.

Age (year)	No.of patient	Percentage%
2-4	11	15.71
5-7	23	32.85
8-10	20	28.57
11-13	16	22.85
Total	70	100

Table (2) Distribution of infection according to Residence area.

Area	No.of patient	Percentage%
Urban	27	38.57
Rural	43	61.42
Total	70	100

Table (3) Distribution of infection according to the months of the study

Months	No.of patient	Percentage%
October 2023	4	5.71
November 2023	13	18.57
December 2023	12	17.14
January 2024	16	22.85
February 2024	11	15.71
March 2024	8	11.42
April 2024	6	8.57
Total	70	100

Table (4) Some blood parameters of patients

parameter	Female Infect.	Female control	Male Infect	male control
RBC 10^6µL	4.76-4.80	4.79-4.81	4.58-4.63	4.61-4.77
PLT 10^3µL	176-190	198-205	187-220	194-211
HB g/dL	11.9-14.7	11.6-14.3	12.8-15.7	12.5-15.5
WBC 10^3µL	5.03-5.97	6.12-6.37	5.30-6.34	5.11-5.34
NEU 10^3µL	1.99-1.45	1.98-0.90	2.01-1.15	2.33-1.56
LYM 10^3µL	1.99-0.50	2.02-0.57	1.99-0.50	2.02-0.57
MONO 10^3µL	0.45-0.20	0.41-0.19	0.45-0.20	0.41-0.19
BASO10^3µL	0.04-0.03	0.11-0.12	0.13-0.12	0.11-0.12
ESO10^3µL	0.13-0.09	0.14-0.10	0.14-0.11	0.14-0.10

The highest infection recorded at the age of 5-7 years was (32.85%). The reason for the high rates of infection in children is due to the incomplete immune factors.Agrawal et al.,(2014).

The prevalence typically increases with age, up to about 15 years, presumably because of the acquisition of immunity Bari,(2008)

Increased activity of children and playing with animals in parks also increases the incidence of infection.

The highest percentage of infections recorded in January was (22.85%). Our study agreed with many studies in this aspect because the distribution of infection during the months depends on climatic conditions and vector density, and the incubation period has a role in that variation. Flaih *et al*.,(2021).

Knight *et al*.,(2023). Infection begin with autumn and then peak in winter until spring. Manshad and Abd Al-Kazim (2016).

The high rates of infection in rural areas are due to the spread of host carriers and stores of the parasite, and the abundance of animals in rural areas provides the appropriate environment for the growth of larvae of the vector insect. AL-Hucheimi,S. (2014). Baraa,(2014).

Some parameters did not record significant differences between males and females

The number of white blood cells and neutrophils decreased among male and female patient groups

a result of the collapse of inflammatory cells, especially neutrophils, due to their short life span, it is possible to explain why neutrophil cell debris produces antibiotic-like substances that release strong oxidizing substances that kills pathogens.Shahatha &Saleh (2018);Sangueza *et al*.,(1983)There is a significant increase in lymphocytes. As for antibodies and interleukins, the study did not record differences between the groups.Al-ibrahimi *et al*.,(2021)

REFERENCES

1. Agrawal, S., Khandelwal, K., Bumb, R. A., Oghumu, S., Salotra, P., & Satoskar, A. R. (2014). Pediatric cutaneous leishmaniasis in an endemic region in India. The American journal of tropical medicine and hygiene, 91(5), 901–904.
2. Alexander J, Satoskar AR, Russell DG.(1999) Leishmania species: models of intracellular parasitism. J Cell Sci. 1999;112:2993–3002.
3. AL-Hucheimi,S. (2014).Tracking of Cutaneous Leishmaniasis by parasitological, Molecular and Biochemical Analysis. PHD. Thesis, AL-Kufa Univ.p(109).
4. Al-ibrahimi,L.A.; Alshaibani,H.A.and Alwan,M.S. (2021).the Study of some histopathological changes occurring in white laboratory mice infected with Cutaneous Leishmaniasis in Al – diwaniyah province, Iraq.Al-Qadisiyah J. Of Pure Sci.26(4):130-137.
5. Akhoundi, M., Kuhls, K., Cannet, A., Votýpka, J., Marty, P., Delaunay, P. and Sereno, D. (2016). A historical overview of the classification, evolution,

and dispersion of Leishmania parasites and sandflies. PLoS neglected tropical diseases 10(3).

6. Arfan, B. and Rahman, S. (2006). Correlation of clinical histopathological, and microbiological finding in 60 cases of cutaneous leishmaniasis. IJDVL., 72: 28-32.
7. Baraa, A. H. (2014) .Detection of cutaneous leishmaniasis Using Real-Time PCR in Wasit provice-Iraq.109:42-56.
8. Bari AU.(2008). Childhood cutaneous leishmaniasis. J Clin Diagn Res. 2008;2:973–978.
9. Blum, J., Lockwood, D.N., Visser, L., Harms, G., Bailey, M.S., Caumes, E., Clerinx, J., van Thiel, P.P., Morizot, G. and Hatz, C. (2012). Local or systemic treatment for New World cutaneous leishmaniasis? Re-evaluating the evidence for the risk of mucosal leishmaniasis. International health 4(3), 153-163.
10. Flaih, M. H.; Al-Abady, F .A. and Hussein ,K.R. (2021) .Detection of Leishmania tropica Using Nested-PCR and Some of Their Virulence Factors in Thi-Qar Province, Iraq. Baghdad Sci.J.18(1):700-707.
11. Knight, C. A., Harris, D. R., Alshammari, S. O., nvv Gugssa, A., Young, T., & Lee, C. M. (2023). Leishmaniasis: Recent epidemiological studies in the Middle East. Frontiers in microbiology, 13, 1052478.
12. Karamian, M., Kuhls, K., Hemmati, M. and Ghatee, M.A. (2016). Phylogenetic structure of Leishmania tropica in the new endemic focus Birjand in East Iran in comparison to other Iranian endemic regions. Acta Tropica 158, 68-76.
13. Manshad,F.A.and Abd Al-Kazim,N.A.(2016) Epidemiological study on Cutaneous Leishmaniasis in infected persons in Thi- Qar governorate .JCEPS.6.(1):52-68.
14. Reithinger R, Dujardin JC, Louzir H, Pirmez C, Alexander B, Brooker S.(2007). Cutaneous leishmaniasis. Lancet Infect Dis. 2007;7:581–596
15. Sangueza, O., Sangueza, J., Stiller, M. and and Sangueza, P.(1983). Mucocutaneous leishmaniasis: A clinicopathologic classification. J. Am. Acad. Dermatol., 28: 927-931.
16. Schallig HD, Cardoso L, Hommers M, Kroon N, Belling G, Rodrigues M, Semião-Santos SJ, Vetter H. Development of a dipstick assay for detection of Leishmania-specific canine antibodies. J Clin Microbiol. 2004 Jan;42(1):193-7. doi: 10.1128/JCM.42.1.193-197.2004.
17. Shahatha ,S.S. and Saleh, T.A.(2018). An Epidemiological, Diagnostic, and Therapeutic Study of the Leishmania tropica Parasite in Iraq's Anbar Province. Baghdad Sci.J. 15(4):0392.
18. World Health Organization Regional Office for Africa, (2017). Leishmaniasis [WWW Document]. http://www.afro.who.int/health-topics/Leishmaniasis.
19. Younes, N. N. (2018). Molecular and immunological diagnosis and experimental treatment of cutaneous leishmaniasis in mice and volunteer patients. PhD thesis, Institute of Genetic Engineering and Biotechnology, University of Baghdad