



Full length article

Leishmaniasis among patients visiting medical centers at Dhamar district, Dhamar Governorate, Yemen: A 3-Year retrospective study

IRMS AISHaibani * AAM Al-Qahm, MAW Al-Rimi, SN Al-Hammam, AM AlMushky, AFB Al-Shaghdry, AH AAl- Teaeji, FA M Al- Nujaimi

Department of Medical Laboratory, Faculty of Medical Sciences, Al-Hikma University Dhamar, Yemen

*Corresponding author: E-mail: dr_ibra67@yahoo.com, ibrahimalshaibani@hikmau.net

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ABSTRACT

Leishmaniasis is an important vector-borne disease that represents a serious public health problem. A 3-year retrospective study was conducted at medical centers, Dhamar district, Dhamar Governorate using patient's records with leishmaniasis from 2021-2023. Demographic, clinical and spatiotemporal data such as age, gender, place of residence, occupation, clinical signs, treatment, month variation(season) were collected and reviewed. Collected data were summarized and analyzed using Microsoft Excel and SPSS software respectively. The results revealed that, the overall prevalence rate of leishmaniasis was 88.54% (181 out of 323), and 87.00% and 1.55 % for Cutaneous leishmaniasis (CL) and Visceral leishmaniasis (VL)respectively. The higher number of cases was recorded in year of 2022(33.44%); whereas, the lower in 2021(21.98%). Significant differences($P<0.05$) were observed among prevalence rates of leishmaniasis forms. The higher prevalence rate was in age groups of 11-20 years old, males, rural residents, those visiting G. Dhamar hospital, those with skin lesion, and those treated with Meglumine drug as 30.65, 44.58, 76.78, 26.63, 64.40, 50.46, 45.51% respectively; whereas the lower rate was recorded in age group of 31-40 years (8.36%), females (43.96%), urban residents (11.76%), those visiting General laboratory (0.64%), in lower& upper limbs of patients(1.24%), patients had hepatosplenomegaly (1.55%), and treated Stipogluconate Sodium drug (4.66%). The higher rate of disease was recorded in month of February (11.15%) and the lower in the month of November (4.33%). Statistical analysis revealed that there were significant differences between the prevalence rate and variables of age, medical center, anatomical site, clinical signs, treatment. In conclusion, the leishmaniasis is prevent among the patients' visiting medical centers at Dhamar district areas. An effective control measures should be implemented to reduce and control of leishmaniasis in the study area.

INTRODCTION

Leishmaniasis is disease caused by obligate intracellular protozoan parasites of the genus *Leishmania*.

It is transmitted to humans by the bite of infected female sandflies (Akhlagh et al., 2019; Bruno et al., 2022). The

World Health Organization (WHO) classified the disease as a neglected tropical disease (Elaagip et al., 2020, WHO, 2021; Abukhattab et al., 2024). There are several forms of human leishmaniasis, and the most common forms are cutaneous leishmaniasis (CL), which is characterized with skin sores; and visceral leishmaniasis (VL), which affects several internal organs usually the spleen, liver and bone marrow (WHO, 2021; Geto et al., 2024). All forms of the disease have been strongly associated with poor socioeconomic status, population displacement, a weak immune system and climate change (Alvar and Bern, 2006; Diro et al., 2014). Leishmaniasis cases have been reported in about 89 countries of the world, with an estimated 700000 to 1 million new cases occurring annually. Most cases occur in East Africa, Southeast Asia and South America (Alvar et al., 2012; WHO, 2021).

Over the last few years, a lot of activities have been performed in the prevention and control of leishmaniasis. The strategies for the prevention and control of the disease include management of the environment, sandfly control, avoiding contact with the reservoir, and early detection and treatment of the infected individuals (Lemma et al., 2015; Kassahun et al., 2015). Clinically, *Leishmania* species can infect all human ages and present multiple manifestations (CDC, 2022), depending on the immune and nutritional statuses of the individuals, in cutaneous leishmaniasis (CL), the clinical signs of the diseases ranging from multiple papular, nodular, ulcerative skin lesions to destructive mucocutaneous ulceration; whereas, in visceral (VL), the clinical signs of VL include hectic fever, weight loss, hepatosplenomegaly, and anemia. CL and VL could be diagnosed by serological, hematological and molecular techniques in laboratory (Amro et al., 2009; Nasereddin et al., 2009; Hamarsheh et al., 2012; Handler et al., 2015; Burza et al., 2018; Amro, 2020).

Despite of considerable studies have been conducted on leishmaniasis in Yemen (Alharazi et al. (2016) in Taiz; Asmaa et al., 2017 in Taiz; Alkulaibi et al., 2019 in Western Highlands of Yemen; Nassar et al., 2021 in Hajjah; Ibrahim et al., 2023 in Ibb; Sami et al., 2024 in Yemen), still there is lack of empirical evidences on status of leishmaniasis in the study area. Therefore, this study aimed to investigate the leishmaniasis status on patients attending to Dhamar medical centers for 3 years period from 2021 to 2023

This study will help to understand the geographical distribution and the determinant factors. Such information is vital to develop evidence-based and area-specific interventions.

MATERIALS AND METHODS

Study areas

Dhamar district, Governorate of Dhamar is located approximately 100 km south to Sana'a, the capital of Yemen. In general, the Governorate weather is highly variable as a result of elevation the Governorate from the sea level (2425 meter). The winter of Governorate is cold; whereas, the summer is moderate. The trend of weather change in recent years has leading to change in the Meteorological data values, for example, the average minimum and maximum temperature been have increased; while, rainfall has been reduced. The majority of population work in agriculture.

Study design and collection the Data

The present study is a retrospective study carried out on leishmaniasis's patients visiting Dhamar medical centers for 3 years past, namely, General Dhamar hospital, Taibah hospital, A. B. Sad clinic, Adel Ajarfi, Central laboratory. A total of 330 records of patients diagnosed with leishmaniasis in these medical centers from 2021 to 2023 were selected and reviewed. leishmaniasis diagnosis in these medical centers was performed according to the WHO guidelines and following standard operating procedures (Khabisa et al., 2022). Data related to the demographic characteristics, clinical signs and spatio-temporal information such as age, gender, the location of the lesion, the month variation, and treatment for each individual were collected. The data were collected by experienced medical laboratory technologists and students using a data collection sheet (Debash et al., 2022).

Data analysis

Microsoft Excel was used to summarize data extracted from patients' records. SPSS version 21 software package, wase used for analyzing the data. Descriptive statistics were employed to calculate frequencies and percentages of overall leishmaniasis prevalence and trends of leishmaniasis in terms of seasons, years, sex, age, and patient place of residence. A chi-square test was applied to compare the proportions between the study groups. A P -value ≤ 0.05 was considered statistically significant. Finally, the findings were summarized using Tables. Any incomplete data, were excluded from the analysis.

RESULTS AND DISCUSSION

Prevalence of Leishmaniasis

Leishmaniasis is an emerging tropical infectious disease. It is caused by the protozoan parasite of the *Leishmania* genus, which is endemic in many regions of the world, including the Middle East (Abukhattab et al., 2024).

According to the WHO, different forms of leishmaniasis have been reported from 89 countries and over 350 million people are at risk. Based on clinical symptoms, leishmaniasis is divided into cutaneous, mucocutaneous, diffuse cutaneous, and visceral forms. The number of people who suffer from leishmaniasis is estimated to be 12–15 million. Annually, 2 million new cases of leishmaniasis occur, of which approximately 0.5 million cases are visceral leishmaniasis and 1.5 million cases are cutaneous leishmaniasis CL (Torres-Guerrero et al., 2017). This retrospective study was carried out with main objective to investigate status of leishmaniasis and associated factors in patients visiting medical centers at Dhamar district for 3- years past form 2021-2023.

Out of 330 records of patients, 323 were reviewed and analyzed, 7 records were excluded due to poor quality of the data or lack of data required. The results of this study revealed that, 286 cases were positive for leishmaniasis with overall prevalence rate of 88.54%, furthermore, 87.00% and 1.55% of cases were positive for cutaneous (CL) and visceral (VL) leishmaniasis respectively as presented in Table 1. These results are in line with previous studies (Amin et a., 2000; Hamid and Gobah, 2009; Sarkari et al., 2012; Al-Kamel, 2016; Picón-Jaimes et al., 2018; Akhlagh et al., 2019; Mann et al., 2021; Amro, 2020; Hatami, et al., 2022; Abdulslam et al., 2022; Bruno et al., 2022; Hassanein et a., 2023; Alkurbi and Hassanein, 2023), the prevalence rates reported by above studies are ranging from 4.39% to 81.8% for CL and 3.3% to 29% for VL. The differences and consistency between the results of current study and findings of the above studies could be attributed to differences in study location, study duration, laboratory personnel performance in parasite detection, sample size, availability of medical care, relative abundance and dynamic of sandflies (Debash et al., 2022).

Table 1. Overall prevalence of leishmaniasis in patients visiting Dhamar medical centers between 2021-2023(n= 323)

Leishmaniasis form	No. subjects infected	Prevalence %	95% CI	P value
Cutaneous	281	87.00		0.000
Visceral	5.0	1.55		
Overall	286	88.54	85.1-91.9	

Table 2. Trends of Leishmaniasis in patients at Dhamar Medical Centers between 2021-2023(n=323)

Year	No of subjects infected	Prevalence %	P value
2021	71	21.98	0.448
2022	108	33.44	
2023	107	33.13	

The annual prevalence rate of leishmaniasis among patients visited medical centers of Dhamar during the past 3 years are displayed in Table 2. As shown. The lower (21.98%) and higher (33.444%) prevalence rate was seen in the years of 2021 and 2022 respectively; the data show, there is an increase trend in the prevalence rates of leishmaniasis from 2021 to 2022 and decrease in year of 2023. Significant differences ($P < 0.05$) were not observed among the prevalence rates of disease among patients in different years. These results are similar to findings of Akhlagh et al. (2019) in Iran and Tegegne et al. (2022) in Ethiopia, who carried out retrospective studies on leishmaniasis of human. and reported that there is increase and decrease in the number of suspected and confirmed cases of disease with different years of study. The declined in cases or prevalence rate might be due to effective management control used against vectors and improved of medical care adapted in study areas.

The results of leishmaniasis distribution cases according to sociodemographic characteristics, clinical signs, and treatment are presented in Table 3. As shown, the results demonstrated that, the most infected group of patients was in the age group of 11–20 years old (30.65%); whereas, the lower rate in age group of 31-40 years and above (8.36%). Significant differences ($P < 0.05$) were observed among prevalence rates of age groups ($P < 0.05$). These findings were supported by the works of other researchers (Iddawela et al. 2018; Akhlagh et al., 2019). The higher prevalence rate of leishmaniasis recorded in age group of 11-20 may be attributed to that, the individuals in this group are more active in community and more exposed to infection compare to rest groups of age.

On the basis of sex, the results revealed that males (44.58%) were more prone to infection compared to females (43.96%). However; the statistical analysis showed no significant differences ($P < 0.05$) in the number of leishmaniasis cases among men and women. These results are in contrary with findings of Alebie et al., (2019) who reported females were more infected with leishmaniasis compared to males in Eastern Ethiopia. The higher cases of infection in males in this study could be explained that, in Yemen, men are more vulnerable to infection because they have family responsibilities that need more moving from one place to another subsequently expose themselves more to risk of infection. Furthermore, majority of them are from rural areas and work in agricultural activities that are frequently done outside, making them more vulnerable to sand fly bites (Debash et al., 2022).

Patients residing rural areas (76.78%) were more infected with leishmaniasis compared to patient living in Urban (11.76%) areas. AL-Hassani et al. (2022) carried out epidemiological and histological study on cutaneous

leishmaniasis in humans at Al-Najaf Governorate, Iraq and reached to similar results; however, in contrast with findings of Hatami et al. (2022) who reported more cases of infection among residents in urban areas. The contrary and consistent in prevalence rates among patients residing rural and urban areas might be due to the availability of a suitable environment for causative agent's reservoir & insect vectors, low level of cultural and health awareness

about leishmaniasis (Al-Hassani et al., 2022). The higher prevalence rate of disease was recorded in patient visiting General Dhamar Hospital Authority (26.63%); whereas, the lower in general Laboratory of Dhamar (0.62%). Significant differences ($P<0.05$) were observed among prevalence rates of different medical centers. This may be due to managemental factor, diagnosis equipment and health staff worker's availability and their experience.

Table 3. Distribution of leishmaniasis in patients at Dhamar medical centers according to sociodemographic characteristics, clinical signs and treatment between 2021-2023(n=323)

Variable	Categories	No. of infected subjects	Prevalence %	P value
Age	10<	84	26.01	0.007
	11-20 Yrs	99	30.65	
	21-30 Yrs	36	11.15	
	31-40 Yrs	27	8.36	
	41-60 & above	40	12.38	
Sex	Males	144	44.58	0.176
	Females	142	43.96	
Residency	Urban	38	11.76	0.352
	Rural	248	76.78	
Medical center	A. B. Sad Clinic	84	26.01	0.000
	Adel Ajarfi	55	17.03	
	G. Dhamar hospital	86	26.63	
	Taibah Hospital	59	18.27	
	Central Laboratory	2.0	0.62	
Anatomical sites	Face	208	64.40	0.000
	Upper limbs	30	9.29	
	Lower limbs	14	4.33	
	Trunk	6.0	1.86	
	Face &Upper limbs	12	3.72	
	Upper &lower limbs	4.0	1.24	
	Viscera	5.0	1.55	
Clinical signs	Skin lesion	163	50.46	0.000
	Skin lesion &Fever	118	36.53	
	Hepatospleenmegaly	5.0	1.55	
	Other	11	3.41	
Treatment	Fluconazole	49	15.17	0.000
	Itraconazol	46	14.24	
	Stipogluconat Sodium	15	4.64	
	Meglumine	147	45.51	
	Doxycycline	29	8.98	

On the basis of anatomical sites of diseases, the higher number of lesions was observed in the face area (64.40%); whereas, the lower number in upper & lower limbs (1.24%); Significant differences ($P<0.05$) were observed between the prevalence rate and anatomical site of disease. The higher of lesions of leishmaniasis in face could be explained as that, usually all parts the body are covered with cloths; whereas, face unveiled,

subsequently, expose face more to a sandfly insect bite.

The common clinical signs appeared in the patients infected with leishmaniasis are skin lesion (50.46%) followed by skin lesion & fever in combination (36.53%) for CL and hepatosplenomegaly (1.55%) for VL. Significant differences ($P<0.05$) were observed between prevalence rate and clinical signs of the disease. Previously, several studied have been carried out to identify the clinical signs of leishmaniasis in patients and

reported similar findings or more (Alharazi et al., 2016; Bruno et al., 2022). The higher rate of skin lesion recorded may be due to causative agent species, anatomical location of bites, immuno-reaction factors and nature of disease form.

Regarding treatment of leishmaniasis, the most common drug prescribed was Meglumine (45.51%) followed by Fluconazole (15.17%), others drugs were prescribed also with variety percentages. The reason for prescribing Meglumine more might be due to its efficacy against the leishmaniasis and less toxicity.

The results revealed that the higher prevalence rate was recorded in February (11.15%) which concurred with commencement of winter season; whereas, the lower rate in November (4.33%) which coincided with commencement of Autumn season as depicted in Table 4. Abu Al -Dawanij (2014) and Al- Hassani et al. (2022) reported similar results; whereas, in contrary with findings of Al-Moussawi (2015).

Table 4. Distribution of leishmaniasis in patients according to the month variation (Season) n=323

Season	Month	No. of infected Subjects	Prevalence %	P value
Winter	Dec	35	10.84	0.609
	Jan	27	8.36	
	Feb	36	11.15	
	Mar	27	8.36	
Spring	Apr	22	6.81	
	May	14	4.33	
	Jun	29	8.98	
Summer	Jul	21	6.50	
	Aug	24	7.43	
	Sep	21	6.50	
Autumn	Oct	16	4.95	
	Nov	14	4.33	

These discrepancies in the percentages and number of infections cases in different month or season may be attributed to the fact that the incubation period of disease is varies from person to person, immune system of the host, as well as changes and fluctuations in climate in the country as well (Al-Hassani et al., 2022).

CONCLUSIONS

It could be concluded from this study: The leishmaniasis is prevent among the patients visiting Dhamar medical centers. Distribution of leishmaniasis influenced by some sociodemographic and clinical factors. An effective control measures should be implemented in the study area. Early surveillance system should be adapted to monitor the disease and its vectors in study areas.

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CONTRIBUTION OF AUTHORS

IRMSA author contributed to the study conception, design, written 1st draft and final version of the manuscript. Materials preparation and data collection were performed by AAMA, MAWA, SNA, AMA, AFBA. Data analysis and visualization were performed by AHAA and FAMA. All authors read and approved the final version of manuscript.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

ETHICS STATEMENT

Informed consent was not needed because of the retrospective nature of the study, which included accessed patient record only. All patient records data were anonymized and handled confidentially. The study protocol was approved by a competent Authority at Al-Hikma University.

REFERENCES

- Abdulslam, A A, Ahmed M, Gadeed A, Eltayeb A, Ahmed S, Hamad S, Hussein M. 2022. Five-year retrospective hospital-based study on epidemiological data regarding human leishmaniasis in West Kordofan state, Sudan. *World J Clin Infect Dis*; 12(2): 61-68.
- Abu Dawanij, Hassan Zaati Abad I. 2014. A study of some epidemiological aspects of leishmaniasis. *Leishmaniasis and Parasite Diagnosis Using Nested - Kinetoplast Polymerase Chain Reaction Technique Minicircle DNA-PCR In Maysan Governorate*, Master Thesis, College of Education for Pure Sciences, University of Basra - Iraq.
- Abukhattab M, Daghfal J, Adam M, Hashim SA, Mohammed FK, Al-Maslmani M. 2024. Epidemiology, clinical characteristics, and treatment outcomes of leishmaniasis in Qatar: A retrospective study, *Qatar Medical Journal*; (4):51 <https://doi.org/10.5339/qmj.2024.51>.
- Akhlagh, A, Salehzadeh A, Zahirnia AH and Davari B. 2019. 10-Year Trends in Epidemiology, Diagnosis, and Treatment of Cutaneous Leishmaniasis in Hamadan Province, West of Iran (2007–2016). *Front. Public Health* 7:27. doi: 10.3389/fpubh.2019.00027.

- Alebie, G, Worku A, Yohannes S, Urga B, Hailu A and Tadesse D. 2019. Epidemiology of visceral leishmaniasis in Shebelle Zone of Somali Region, eastern Ethiopia. *Parasites Vectors*; 12:209; <https://doi.org/10.1186/s13071-019-3452->.
- Alharazi, T, Alasbahi E and Saif N. 2016. Study on Cutaneous Leishmaniasis among Clinically Suspected Patients in Taiz City, Taiz Governorate, Yemen. *International Journal of Tropical Disease & Health* 19(2): 1-5.
- Al-Hassani, S. J. M., & AL-Bsherawee, A. I. M. 2022. Epidemiological and histological study of cutaneous leishmaniasis in humans in Al-Najaf Al-Ashraf governorate. *International Journal of Health Sciences*, 6(S6), 8874–8895. <https://doi.org/10.53730/ijhs.v6nS6.12367>.
- Al-Kamel, MA. 2016. Leishmaniasis in Yemen: a clinicoepidemiological study of leishmaniasis in central Yemen. *International Journal of Dermatology*, 55, 849–855.
- Alkulaibi, MM, Suleiman AM, Khalil EAG and Al-Garadi MA. 2019. Prevalence of Cutaneous Leishmaniasis in Western Highlands in Yemen. *Journal of Tropical Medicine*. ID 8248916, 1-7.
- Alkurbi, Mo and Hassanein RAM. 2023. "Leishmaniasis in the Kingdom of Saudi Arabia: Epidemiological Trends from 2019 to 2021: A Retrospective Study". *Acta Scientific Medical Sciences* 7.9: 165-174.
- Alvar J, Vélez ID, Bern C, Herrero M, Desjeux P, Cano J et al. 2012. Leishmaniasis worldwide and global estimates of its incidence. *PLoS One*.;7(5): e35671.
- Alvar, J, Yactayo S, Bern C. 2006. Leishmaniasis and poverty. *Trends Parasitol*; 22: 552-557.
- Amro A, Azmi K, Schonian G, Nasereddin A, Alsharabati MB, Sawalha S, et al. 2009. Epidemiology of paediatric visceral leishmaniasis in Hebron district, Palestine. *Trans R Soc Trop Med Hyg*;103(7):731–6.
- Amro, A. 2020. Epidemiology and spatiotemporal analysis of visceral leishmaniasis in Palestine from 1990 to 2017. *International Journal of Infectious Diseases*; 90 :206–212.
- smaa, Q, AL-Shamerii S, Al-Tag M, AL-Shamerii A, Li Y and Osman BH. 2017. Parasitological and biochemical studies on cutaneous leishmaniasis in Shara'b District, Taiz, Yemen. *Ann Clin Microbiol Antimicrob*; 16:47.
- Bruno, F, Vitale, F, La Russa, F, Reale, S, Späth, G.F, Oliveri, E, Gargano, V, Valenza, V, Facciponte, F, Giardina, S, et al. 2022. Retrospective Analysis of Leishmaniasis in Sicily (Italy) from 2013 to 2021: One-Health Impact and Future Control Strategies. *Microorganisms*, 10, 1704. <https://doi.org/10.3390/microorganisms10091704>.
- Burza, S, Croft SL, Boelaert M. 2018. Leishmaniasis. *Lancet*.; 392(10151): 951-970.
- CDC, 2022. Parasites - Leishmaniasis Resources for Health Professionals. Accessed January 28.
- Debash, H, Ebrahim H and Bisetegn H. 2022. Epidemiological and clinical characteristics of cutaneous leishmaniasis among patients attending at Tefera Hailu Memorial Hospital, Sekota, Northeast Ethiopia: A five-year trend analysis (2016–2020).
- Diro, E, Lynen L, Ritmeijer K, Boelaert M, Hailu A, van Griensven J. 2014. Visceral Leishmaniasis and HIV coinfection in East Africa. *PLoS Negl Trop Dis*; 8.
- Elaagip A, Ahmed A, Wilson MD, Boakye DA, Abdel Hamid MM. 2020. Studies of host preferences of wild-caught *Phlebotomus orientalis* and *Ph. papatasi* vectors of leishmaniasis in Sudan. *PLoS One*; 15.
- Geto AK, Berihun G, Berhanu L, Desye B, Daba C. 2024 Prevalence of human visceral leishmaniasis and its risk factors in Eastern Africa: a systematic review and meta-analysis. *Front Public Health*. 2024 Nov 21;12: 1488741. doi: 10.3389/fpubh.1488741. PMID: 39659723; PMCID: PMC11628699.
- Hamarsheh O, Nasereddin A, Damaj S, Sawalha S, Al-Jawabreh H, Azmi K, et al. 2012. Serological and molecular survey of *Leishmania* parasites in apparently healthy dogs in the West Bank, Palestine. *Parasites Vectors*; 5:183.
- Hamid GA, Gobah GA. 2009. Visceral leishmaniasis in Yemeni children. *Turk J Hematol*; 26: 25–28.
- Handler MZ, Patel PA, Kapila R, Al-Qubati Y, Schwartz RA. 2015. Cutaneous and mucocutaneous leishmaniasis: Differential diagnosis, diagnosis, histopathology, and management. *J Am Acad Dermatol*.;73(6): 911-26; 927-8.
- Hassanein, RAM, El-Shemi AG, Albalawi BM. 2023. Cutaneous leishmaniasis in Tabuk, Saudi Arabia: epidemiological trends from 2006 to 2021. *Pan African Medical Journal*. 2023;45(11). 10.11604/pamj.2023.45.11.38632.
- Hatami, H, Ramezankhani A, Hasannezhad E and Souri A. 2022. Epidemiological Study of Cutaneous Leishmaniasis in the Population Covered by Shahid Beheshti University of Medical Sciences in Iran from 2011 to 2021. *Int J Infect*; 9(4):e123990.
- Ibrahim, H., Hamid, K.A.E., Aziz, T.A.E. et al. 2023. Nasal mucocutaneous leishmaniasis (MCL) with necrotizing granulomatous inflammation inducing cytotoxic T-cell lymphoma in a male Yemeni patient. *Egypt J Intern Med* 35, 37. <https://doi.org/10.1186/s43162-023-00219-y>.
- Iddawela, D, Vithana SMP, Atapattu D, Wijekoon L. 2018.

- Clinical and epidemiological characteristics of cutaneous leishmaniasis in Sri Lanka. *BMC Infect Dis.* 18:108. doi: 10.1186/s12879-018-2999-7.
- Kassahun A, Sadlova J, Benda P, Kostalova T, Warburg A, Hailu A, Baneth G, Volf P, Votycka J. 2015. Natural infection of bats with *Leishmania* in Ethiopia. *Acta Trop.*; 150:166-70. doi: 10.1016/j.actatropica.07.024.
- Khabsa J, Jain S, El-Harakeh A, Rizkallah C, Pandey DK, Manaye N, Honein-AbouHaidar G, Halleux C, Dagne DA, Akl EA. 2022. Stakeholders' views and perspectives on treatments of visceral leishmaniasis and their outcomes in HIV-coinfected patients in East Africa and South-East Asia: A mixed methods study. *PLoS Negl Trop Dis.* Aug 15;16(8):e0010624. doi: 10.1371/journal.pntd.0010624.
- Lemma W, Tekie H, Yared S, Balkew M, Gebre-Michael T, Warburg A, Hailu A. 2015. Sero-prevalence of *Leishmania donovani* infection in labour migrants and entomological risk factors in extra-domestic habitats of Kafta-Humera lowlands - kala-azar endemic areas in the northwest Ethiopia. *BMC Infect Dis.* 15(1): 1–8. doi: 10.1186/s12879-015-0830-2. PMID: 25884167; PMCID: PMC4347912.
- Mann, S, Frasca K , Scherrer S, Henao-Martínez AF, Newman S, Ramanan P , A Suarez J. 2021. A Review of Leishmaniasis: Current Knowledge and Future Directions. *Current Tropical Medicine Reports*; 8:121–132.
- Nasereddin, A, Azmi K, Jaffe CL, Ereqat S, Amro A, Sawalhah S, et al. 2009. Kinetoplast DNA heterogeneity among *Leishmania infantum* strains in central Israel and Palestine. *Vet Parasitol*; 161(1–2):126–30.
- Nassar, AA, Abdelrazzaq MH, Almahaqri AH, Al-Amad MA, Al Serouri AA, Khader YS. 2021. Cutaneous Leishmaniasis Outbreak Investigation in Hajjah Governorate, Yemen, in 2018: Case-Control Study *JMIR Public Health Surveill*;7(5): e27442.
- Picón-Jaimes, YA, Abril-Sánchez LR, Ruíz-Rodríguez EJ, González- Jiménez NM, Jiménez-Peña OM. 2018. Epidemiological behavior, geographic distribution and initial clinical management of cutaneous leishmaniasis in Boyacá. 2008-2015. *Rev. Fac. Med.*;66(2):159-69. English. doi: <http://dx.doi.org/10.15446/revfacmed.v66n2.62196>.
- Sami, Ahmed Al Haidari, Othman S Bahashwan, Nasreen Bin Azzon, Rasheed Tawfik Alshami, Magdi Aldaari, Abdul Rahman Al-Hadi and Hassan A Al-Shamahy. Epidemiology of Visceral Leishmaniasis in Yemen: A Retrospective Study. *Annal of Pub Health & Epidemiol.* 2(4): 2024. APHE.MS.ID.000545. DOI: 10.33552/APHE.2024.02.000545.
- Sarkar, B, Hatam G and Ghatee MA. 2012. Epidemiological Features of Visceral Leishmaniasis in Fars Province, Southern Iran. *Iranian J Publ Health*, 41(4): 94-99.
- Tegegne, B, Yimer M, EjiguK, Alemu Gand Estifanos F. 2022. Eight-Year Trend Analysis of Cutaneous Leishmaniasis Cases in West Amhara Region Referred to Amhara Public Health Institute Northwest, Ethiopia: A Retrospective Study. *Hindawi BioMed Research International* Volume 2022, Article ID 6562092, 5 pages <https://doi.org/10.1155/2022/6562092>.
- Torres-Guerrero E, Quintanilla-Cedillo MR, Ruiz-Esmenjaud J, Arenas R. 2017. Leishmaniasis: a review. *F1000Res.* 6:750. doi: 10.12688/f1000research.11120.1.
- WHO, 2021. World Health Organization, Control of Neglected Tropical Diseases. [DOI: 10.1002/9781683673903.ch11].

داء الليشمانيا بين المرضى الذين يرتادون المراكز الطبية في مديرية ذمار، اليمن: دراسة استيعادية لمدة ثلاث سنوات

إبراهيم ردمان الشيباني*، علي احمد القحوم، محمد عبد الواحد الريمي، سلطان ناصر الهمام، عيبر محمد الموشكي، امل فيصل الشغدري، امل محمد الذياجي، فوزية عبد الجليل النجيمي

قسم المختبرات الطبية، كلية العلوم الطبية، جامعة الحكمة، ذمار
*للمراسلة: dr_ibra67@yahoo.com; ibrahimshaibani@hikmau.net

الملخص

داء الليشمانيا هو مرض طفيلي مهم ينقله ذباب الرمل ويمثل مشكلة صحية عامة وخطيرة على مستوى العالم. تم إجراء هذه دراسة بأثر رجعي مدتها 3 سنوات في بعض مستشفيات ومراكز مديرية ذمار الطبية بهدف تحدد نسبة الإصابة وعوامل الخطورة المصاحبة لحدوث داء الليشمانيا باستخدام سجلات المستشفيات المحلية لمرضى داء الليشمانيا في الفترة من 2021 إلى 2023. تمت مراجعة وجمع البيانات الديموغرافية والسريية مثل العمر والجنس ومكان الإقامة والمهنة والعلامات السريية والعلاج والشهر (الموسم). تم تبويب البيانات المجمعمة وتحليلها باستخدام برنامجي Microsoft Excel و SPSS على التوالي. أظهرت النتائج أن معدل انتشار داء الليشمانيا الإجمالي هو 88.54%، و 87.00% و 1.55% لداء الليشمانيا الجلدي (CL) وداء الليشمانيا الحشوي (VL) على التوالي خلال السنوات الثلاث الماضية. تم تسجيل اعلى عدد من حالات الليشمانيا في عام 2022 (33.44%)، بينما كان أدنى الحالات في عام 2021 (21.98%). كشفت نتائج التحليل الإحصائي عن وجود فرق معنوية ذات دلالة احصائية ($P < 0.05$) بين معدل انتشار أنماط داء الليشمانيا. كان أعلى معدل انتشار لداء الليشمانيا بين المرض في الفئات العمرية 11-20 سنة، في الذكور، في الريف، في مستشفى محافظة ذمار، الآفات الجلدية، مع استخدام علاج Meglumine بنسبة 30.65، 44.58، 76.78، 26.63، 64.40، 50.46، 45.51% على التوالي؛ في حين تم تسجيل أدنى معدل في الفئة العمرية 31-40 سنة (8.36%)، الإناث (43.96%)، في المناطق الحضرية (11.76%)، في المختبر العام (0.64%)، في الأطراف السفلية والعلوية مجتمعة (1.24%)، تضخم الكبد الطحال (1.55%)، في استخدام عقار ستيبوغلوكونات الصوديوم (4.66%). تم تسجيل أعلى معدل للمرض في شهر فبراير (11.15%) وأدنى معدل في شهر نوفمبر (4.33%). أظهر التحليل الإحصائي وجود فروق معنوية ذات دلالة إحصائية ($P < 0.0$) بين معدل الانتشار المرض والعمر والمركز الطبي والموقع التشريحي في الجسم والعلامات السريية والعلاج. يستنتج من هذه الدراسة، ان داء الليشمانيا منتشر بين المرضى الذين يرتادون على مستشفيات مدينة ذمار ومراكزها الطبية. لذا توصي الدراسة بوضع خطة فعالة لمكافحة داء الليشمانيا في منطقة الدراسة والمناطق الأخرى المشابهة من البلاد.

الكلمات المفتاحية: داء الليشمانيا، دراسة استيعادية، ذمار، اليمن

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