

An Epidemiological Study On The Parasite Cutaneous Leishmaniasis In Iraq

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Abstract. Leishmaniasis is recognized as a significant health concern in Iraq. The disease begins with minor elevations (papules) and progresses into ulcers. Epidemiological investigations play a crucial role in managing and implementing effective preventive strategies for this disease. This study examines the epidemiology of cutaneous leishmaniasis in Iraq over the past 7 years. This descriptive-analytical cross-sectional inquiry analyzed data concerning patients with cutaneous leishmaniasis over the previous 7 years at the Iraq Health Center. Demographic and epidemiological data of the patients were collected from healthcare centers in Iraq through collaborative efforts with healthcare facilities. Using SPSS software, epidemiological records of the patients were extracted and subjected to statistical analysis employing the chi-square test. Out of 175 patients examined, 88 were male (53%), and 87 were female (47%). The majority of patients belonged to the age bracket of 9 months to 4 years, with the lowest number of cases in the age group of 40 to 49 years. Mainly, the manifestations of the disease were observed on the facial region and limbs. Furthermore, a statistically significant correlation was observed between age groups and the type of leishmaniasis (P > 0.05), as well as between gender and the type of leishmaniasis (P > 0.05). According to the conducted analysis, the prevalence of the disease in Iraq showed a declining trend from 2008 to 2014. This reduction in the disease incidence can be attributed to the improvement in health education status and the adherence to personal hygiene practices among the population.

Keywords: Cutaneous, Leishmaniasis, Epidemiology, Iraq.

1. INTRODUCTION

Cutaneous leishmaniasis is a disease transmitted between humans and animals, underscoring its zoonotic nature (Alemu et al., 2023; Khan et al., 2022; Rafique et al., 2023) Development, optimization, and characterization of trifluralin transfersomal gel to passively target cutaneous leishmaniasis (Castro et al., 2023; de Vries & Schallig, 2022; Khan et al., 2022; Lozano et al., 2023; Madusanka et al., 2022). The World Health Organization has categorized it among the six major infectious diseases in tropical regions globally (WHO, 2023; Díaz et al., 2023; Mboussou et al., 2019; Talisuna et al., 2020; Zheng et al., 2023) Leishmaniasis is prevalent in 88 countries spanning four continents, including 22 countries in Europe and the Americas and 66 countries in Asia and Africa (Mannan et al., 2021; Rocha et al., 2022; Singh et al., 2016; Steverding, 2017; Wamai et al., 2020). It is regarded as one of the most significant diseases in tropical and subtropical regions, ranking second only to malaria (Cowman et al., 2016; Makanjuola & Taylor-Robinson, 2020; Packard, 2021). Presently, approximately 12 million individuals are impacted by leishmaniasis globally (Bailey et al., 2017; Malvolti et al., 2021; Torres-Guerrero et al., 2017; Wamai et al., 2020). Each year, there are 2 million new cases of leishmaniasis reported, including half a million visceral cases and 1.5 million cutaneous cases (Bhunia et al., 2020; Kumar et al., 2020; Scarpini et al., 2022). In Iraq, leishmaniasis is acknowledged as a significant health concern, characterized by small prominences (papules) (Rebouças-Silva et al., 2020; Santos, 2020). These lesions gradually

enlarge and progress into ulcers. Ulcers may spontaneously heal over several weeks to months, and occasionally, over a year or more (Kraft et al., 2020; Raffetto et al., 2020). This illness imposes a substantial economic burden on families, communities, and nations, particularly in developing countries (Peres et al., 2019; Turmusani, 2018). Various parasites belonging to the genus Leishmania are the underlying causes of this disease (Maurício et al., 2018; Thakur et al., 2018). Human infection is facilitated by Phlebotomus Papatasi, a sandfly species typically found in forested areas, caves, and burrows of small mammals (Ribeiro, 2023; Tesh, 2019). Approximately ninety percent of cutaneous leishmaniasis cases are concentrated in seven countries: Afghanistan, Algeria, Brazil, Iraq, Peru, Saudi Arabia, and Syria (Al-Jabi, 2019; Flaih, 2022; Sharifi et al., 2023). This condition ranks as one of the most significant and widespread indigenous diseases in Iraq, being the second most common parasitic disease transmitted by vectors, following malaria. It appears in two forms: urban (dry) and rural (wet) (Al-Mekhlafi et al., 2021; Das & Deobhankar, 2022). The prevalence of each type may vary depending on factors such as climate, personal hygiene, disease vectors, among others, making each more prevalent in specific regions (Baker et al., 2022; Caminade et al., 2019). Annually, around 20,000 cases of cutaneous leishmaniasis are reported from various regions of Iraq (Al-Warid et al., 2019; Moradi et al., 2018). However, it is estimated that the actual number is several times higher than the reported figures. The incidence of cutaneous leishmaniasis in Iraq has been increasing, with the number of positive cases rising by approximately 105% in 2005 compared to 2001 (Ghatee et al., 2020; Sharifi et al., 2023). The antimony-containing medication, Glucantime, is utilized for treating the disease. However, it is expensive and requires multiple injections, with resistance to the drug being common. Local administration of the medication around the ulcer site is painful. Acknowledging the effectiveness of epidemiological studies in disease control and preventive measures, this research aims to investigate the epidemiology of cutaneous leishmaniasis in Iraq over the past 7 years.

2. MATERIAL AND METHOD

To comprehensively assess the epidemiological landscape of cutaneous leishmaniasis in Iraq, we conducted a cross-sectional descriptive-analytical study. Collaborating closely with the Health Center, we extracted pertinent patient dossier information, including age, gender, nationality, type of cutaneous leishmaniasis, and lesion count. Our study encompassed all individuals diagnosed with cutaneous leishmaniasis from April 2008 to December 2014. Samples were meticulously collected from suspicious lesions, and subsequent smears were prepared for parasite examination and clinical laboratory confirmation across healthcare centers in Iraq. Subsequently, we meticulously analyzed the data using SPSS software version 18, employing both descriptive statistics and the chi-square test. Throughout our analysis, we diligently applied a significance level of less than 0.05 to ensure robustness and reliability in our findings.

3. RESULTS AND DISCUSSION

The data analyzed in this study encompassed 175 confirmed cases of cutaneous leishmaniasis, stratified into age groups as illustrated in Figure 1. The age group most impacted by cutaneous leishmaniasis was 9 months to 4 years, comprising 40 individuals (22%), followed closely by the 10 to 19 years category with 38 individuals (21%). In contrast, the least affected age group was 40-49 years, with a mere 9 individuals (0.05%), while those aged above 50 constituted 15 individuals (2%). Examination of the prevalence of cutaneous leishmaniasis cases by gender during the years 1387 to 1393 unveiled that out of 175 cases, 88 (51%) were male and 87 (49%) were female. In 1387, the highest incidence of cutaneous leishmaniasis was recorded, with 37 cases (21%) in males and 29 cases (16%) in females (Figure 2). Furthermore, Figure 4 illustrates that over the study period, dry-type urban cutaneous leishmaniasis accounted for 107 cases (60%), while wet-type rural cutaneous leishmaniasis comprised 68 cases (40%). Analytical test results indicated a statistically significant difference between the gender of the study participants and the type of leishmaniasis (P > 0.05). Additionally, the examination findings revealed a statistically significant difference between age groups and the type of leishmaniasis (P > 0.05), with the highest prevalence observed in the age groups of 9 months to 4 years and 10 to 19 years.

The current study investigates the epidemiology of cutaneous leishmaniasis using data collected from healthcare centers throughout Iraq. Conducted in collaboration with the Healthcare Center of Baghdad city, the study period spans from the beginning of 2008 to the end of 2014. Our findings reveal that the age group most affected by cutaneous leishmaniasis was the 9 months to 4 years' category, whereas the least affected age group was the 40-49 years' category. Additionally, 53% of patients diagnosed with cutaneous leishmaniasis were male, compared to 47% female, indicating a higher prevalence among males. In the year 1387, the highest incidence of cutaneous leishmaniasis was recorded. The facial region emerged as the most affected area (54%), followed by the hands and feet (40%), with other body parts accounting for the remaining 6%. Throughout the study period, dry-type urban cutaneous leishmaniasis constituted 107 cases (60%), while wet-type rural cutaneous leishmaniasis comprised 68 cases (40%).

The study findings uncovered a significant disparity between age groups and the type of leishmaniasis (P > 0.05), with the highest prevalence observed among individuals aged 9 months to 4 years and 10 to 19 years. Furthermore, the analytical test results emphasized a statistically significant difference between the gender of the study participants and the type of leishmaniasis (P > 0.05). In their study in Turkey, (Uzun et al., 1999). illustrated that the most widely distributed lesions were primarily located on the face, followed by the feet and other body parts. Similarly, (Ullah et al., 2009) in their study in Pakistan, found that the majority of lesions were predominantly situated in areas such as the face, hands, and feet. Our study indicates a downward trend in cutaneous leishmaniasis over the past 7 years across various parameters including age, gender, lesion characteristics, and the type of urban and rural cutaneous leishmaniasis in Iraq. Hence, in alignment with the educational programs evidently reflected in the monthly plans of the Health Center, it can be inferred that educational and literacy enhancement initiatives, such as proper waste disposal, mosquito control, and other preventive measures, are playing a pivotal role in significantly reducing the disease burden.



Figure 1. Frequency of cutaneous leishmaniasis cases based on age groups.



Figure 2. Frequency of cutaneous leishmaniasis cases by gender.



Figure 3. Frequency of cutaneous leishmaniasis cases by affected body part.



Figure 4. Frequency of cutaneous leishmaniasis cases by type of lesion.

4. CONCLUSION

The present study underscores a decreasing trend in cutaneous leishmaniasis incidence from 2008 to 2014 in Iraq. This decline can be attributed to various factors, notably the implementation of effective educational programs by health authorities, an increase in literacy levels among the population, and enhanced adherence to personal and social hygiene practices.

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