

Epidemiology Aspects of Cutaneous Leishmaniasis in The East Zone of Afghanistan

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ABSTRACT

Background: Localized cutaneous leishmaniasis (LCL) is a vector-borne disease commonly caused by the flagellate parasites *Leishmania tropica* or *L. major* in the Old World. The clinical features of the leishmaniasis differ, and in general, these diseases have different geographic distributions. The face, hands, and feet represent the body parts that are most frequently infected by the parasite. If not treated promptly, *Leishmania* causes permanent scars, in Afghanistan it has become a significant social issue due to limited awareness and the perception that those who suffer from Leishmanian scars are flawed individuals.

Methods: This is a prospective cross-sectional study conducted from March 2023 to February 2024 in Nangarhar University Teaching Hospital including all those patients who had cutaneous Leishmaniasis.

Result: Over the course of a year, this study was carried out in the dermatology department of Nangarhar University Teaching Hospital. 26574 patients visited the Dermatology department this year; 347 (1.3%) of them had cutaneous leishmaniasis, males were more affected by the disease (63.2%); majority of the affected individuals were residents of the rural areas (82.42%) and (84.43%) were represented with ulcerated lesions. Five individuals complained about the disease for two years, and one person for four years.

Conclusion: Illiteracy, poverty, and rural life contribute to the disease's high incidence in the east zone of Afghanistan. This data can assist health authorities in identifying new foci, developing an effective strategy for providing health services to the poor in this area.

Keywords- Cutaneous Leishmaniasis, rural, Afghanistan.

I. INTRODUCTION

Leishmania is a communicable parasitic disease that manifests as an important health problem worldwide. All forms of leishmaniasis are caused by morphologically indistinguishable protozoa of the family Trypanosomidae, called *Leishmania*. The clinical features of the leishmaniasis differ, and in general, these diseases have different geographic distributions. The variable clinical manifestations may result from the diversity of the organism, the person's immune status, and their genetic ability to initiate an effective cell-mediated immune response to the specific infecting organism. It is known that the antigen-specific T-cell responses, which lead to the production of interferon

(IFN) and interleukin-12 (IL-12), are important for the healing of the lesions and the induction of lifelong, species-specific immunity to reinfection that results after natural infection. Both CD4+ and CD8+ lymphocytes appear to be active in the immune response. IL-10-producing natural regulatory T cells may play a role in the downregulation of infection-induced immunity.

Localized cutaneous leishmaniasis (LCL) is a vector-borne disease commonly caused by the flagellate parasites *Leishmania tropica* or *L. major* in the Old World. The human host of *L. major* is, in most cases, an accidental victim, with gerbils being the sylvatic reservoir. Infection with *L. tropica* is largely considered to be an anthrophilic disease but may be transmitted by rodents or dogs^{[1][10]}

Sandflies carry the disease from an affected person or animal to a healthy person. Each year, millions of people in underdeveloped nations contract it. In the nations where Lishmania is prevalent, the World Health Organization has implemented national campaigns against the illness, which is crucial for both treatment and prevention. Every year, reports of Lishmania parasite cases number in the thousands. Phlebotomus papatasia and Phlebotomous sergenti, which transmit Leishmania parasites from Tropica and Majora species, account for the majority of disease vectors in Afghanistan. [2] [11] The face, hands, and feet are among the body parts that are most commonly infected by the parasite. The fact that it leaves scars if left untreated has made it a significant social issue because few people are aware of it.

The face, hands, and feet are the body parts most frequently affected by the parasite. Lishmania causes irreversible tissue damage. [13][14][15] Due to a lack of knowledge and the belief that persons who have the scars are defective, leishmanian scarring has grown to be a serious societal problem in Afghanistan and Affected individuals may also endure severe depression. Leishmaniasis is an extremely common illness in the eastern part of Afghanistan, where it is one of the endemic zones. In order to swiftly support future disease-related efforts, we felt it was imperative to conduct this research on the cases of cutaneous leishmaniasis at the Nangarhar University Teaching Hospital, since cutaneous Lishmania patients are referred there for treatment.

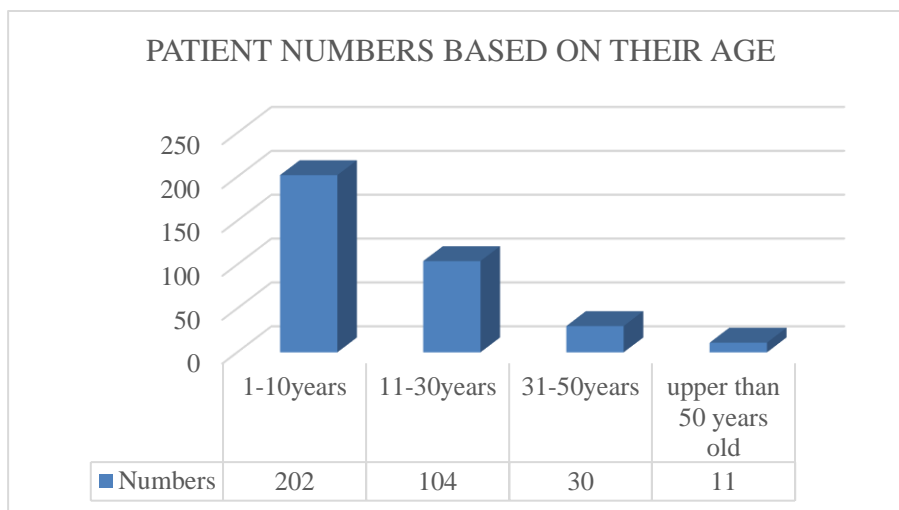
II. METHOD AND MATERIALS

This is a prospective cross-sectional descriptive study that included all patients, regardless of age or gender, who had cutaneous leishmaniasis that had been clinically identified. From March 2023 to February 2024, they visited from various parts of the Esat Zone of Afghanistan to the Nangarhar University Teaching Hospital. Exclusion criteria for the trial were patients with a questionable clinical lesion, those who declined to participate in the study, and those who had undergone conclusive therapy for cutaneous leishmaniasis. Every patient that was enrolled had their name, age, sex, address, length of illness, number of lesions, and location of lesions documented. The lesions were categorized into papule, nodule, and ulcer. Clinically diagnosed individuals were referred to the laboratory for microscopic confirmation.

All the statistical analysis was done by the Statistical Package for the Social Sciences (SPSS) program (version 20).

III. RESULT

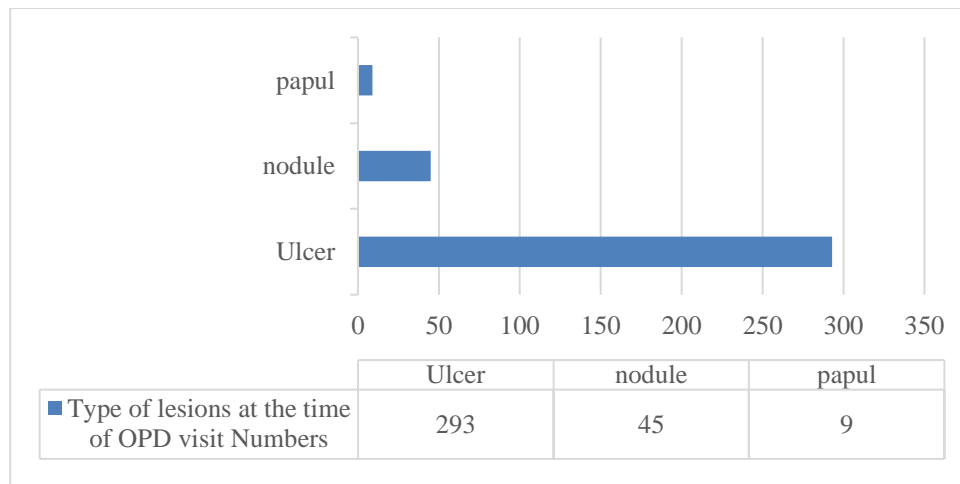
Over the course of a year, this study was carried out in the dermatology department of Nangarhar University Teaching Hospital. 26574 patients visited the Dermatology department this year; 347 (1.3%) of them had cutaneous leishmaniasis; 128(34.8%) of them were female and 219 (63.2%) were male. The majority of the patients 202(82.42%) were children aged 1 to 10 years, while the least number of patients 11(3.17%) were adults over 50. The oldest patient visited was 80 years old, and the youngest was only 18 months old.



Of these patients, 286 (82.42%) lived in rural areas, while the remainder 61 (17.5%) lived in urban areas

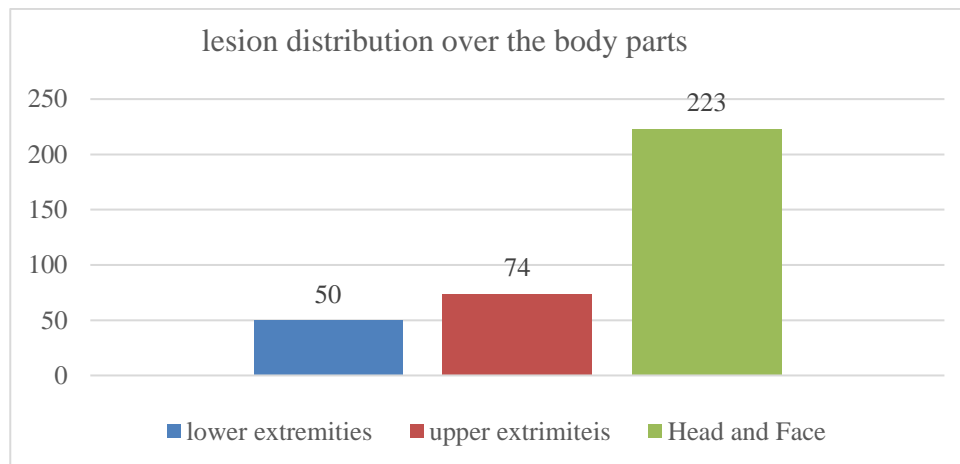
Out of this group, five individuals complained about the sickness for two years, and one person for four

years. Ulcerated lesions, an advanced stage of the disease that increases the risk of scarring and secondary infections, were present in 293 (84.43%) of the patients. Merely 54 patients (15.56%) received visits throughout the initial phases (papule or nodule) of their illness.



Based on the lesion's location, 124 patients, or 35.74 percent, had lesions in the head and face. The

remainder patients lesions were located in their lower and upper extremities.



Merely 16 patients (4.61%) exhibited multiple lesions, with only two patients having three lesions and the remaining patients having two lesions. Winter and springtime are when the majority of patients visited the OPD clinic.

Among these patients who has cutaneous leishmaniasis, 301 (86.7%) described their economic situation as poor.

Occurrence of diseases in relation to seasons	
Season	Number of cases
Spring	108
Summer	52
Autumn	75
Winter	112

IV. DISCUSSION

Cutaneous leishmaniasis is a chronic disease, if not treated promptly, can lead to permanent tissue

destruction. This study revealed that men are more susceptible to this disease than women. In Sri Lanka between 2005 and 2015 The same conclusion has also been reached via descriptive study. This study demonstrates that women are less likely than males to get the disease and the reason for the lower incidence of the disease in women is the stimulatory effect of estrogen on the Th1 immune response. [3] However, a study carried out on 161 patients in the Indian state of Himachal Pradesh in 2005 revealed that the frequency of women affected by the disease was nearly equal to that of men. [6]

We also learned from this study that 82.42% of the patients lived in rural areas. This could be owing to illiteracy and poverty, which impact the vast majority of Afghanistan's rural residents. Furthermore, the rural areas offer an appropriate habitat for the carrier; animal caves, fissured walls, and large, old trees all contribute to this ecosystem. [4][5]

According to the findings of this study, 84.43% of patients presented to the clinic with ulcerated lesions at an advanced stage of the disease. This indicates that people are unaware of the condition and are unable to

afford the treatment of the disease in its early stages. Unfortunately, despite having been proven that Afghanistan is an endemic area for cutaneous Leishmaniasis, there are no government facilities for treatment and prevention of the disease. This study focused on the eastern region of Afghanistan, which experiences hot, dry weather in the closing weeks of spring, summer, and the first few weeks of fall. This study revealed that the majority of patients came during the first few weeks of spring and the last few weeks of winter, when it's temperate and rainy outside. Similar results were found in a study carried out in southwest Iran and published in 2015.^[8]

We were unable to identify the type of parasite throughout our research, and we were not given an explanation regarding the parasite's origin, including whether it originated in a human or an animal. More extensive study is required to fully understand the cause of the disease. During the course of this study, it was found that six individuals had a history of the disease lasting two years or longer, which may indicate that the sickness was of the lupoid variety. Future studies on the spreading of this disease's lupoid form are required.

V. CONCLUSION

The current study found that cutaneous leishmaniasis has arisen as a major health issue in rural parts of eastern Afghanistan. Environmental susceptibilities for the parasite's carrier, as well as illiteracy and poverty, all contribute to the disease's high incidence. This data can assist health authorities in identifying new focuses, developing an effective strategy for providing health services to the poor in this area, and promoting operational, epidemiological, and entomological research in Afghanistan.

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Conflict of interest

All authors express no conflict of interest in any part of research, manuscript and submission to the journal.

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