Original Article

Clinical Spectrum of Cutaneous Leishmaniasis in Children of Southern Region of Pakistan

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Abstract

Background: Cutaneous leishmaniasis (CL) has a wide spectrum of clinical presentations. Children are not considered as vulnerable as adults to acquire the disease and studies regarding clinical spectrum of CL in children population are sparse.

Objective: The study was aimed to explore the extended clinical spectrum of CL in children of southern region of Pakistan.

Methods: Children of all ages having lesions clinically suggestive of CL, anywhere on the body were included in the study (Jan 2019-Dec 2023).The diagnosis was established on the basis of clinical appearance, geographical origin and slit skin smear examination. Patients were treated with weekly intralesional injections of meglumine antimonite for 4-16 weeks. Various demographical features and clinical patterns were recorded. Descriptive statistics were used for analysis.

Results: 72 childhood cases were seen among 316 of total patients of cutaneous leishmaniasis. Age range was 3 months -15 years (mean age = 8.72 ± 4.47). Male to female ratio was 1.5:1.Majority of the patients (75%) had solitary lesions. Maximum lesion count was >50 in one case and 90%had lesions on face. Cheeks were most common sites followed by nose and lips. Predominant clinical pattern was psoriasiform plaque followed by nodular, noduloulcerative. Some atypical morphologies like furunculoid, cheilitis, chancriform, verroucous and lupoid were also seen. All patients responded well to treatment without any significant side effect.

Conclusion: Childhood CL exhibits varied clinical spectrum. Lesions are characteristically seen on face as against on extremities in adults and respond favorably to weekly intralesional treatment with antimonial compound.

Keywords: Cutaneous leishmaniasis, Childhood cutaneous leishmaniasis, Paediatric leishmaniasis. Old world leishmaniasis.

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Introduction

Cutaneous leishmaniasis (CL) is a parasitic disease caused by different species of Leishmania parasite and is transmitted by vector sand fly (*phlebotomus*) bites.[1] It is endemic in almost 100 countries, and the total risk population is approximately 350 million people. WHO lists CL an emerging and a neglected tropical disease. CL is widely seen throughout Africa, Asia, Europe, North and South America.[1-3] in Pakistan, it has gradually become epidemic in the country.[4] Localized cutaneous leishmaniasis (LCL) usually affects the unclothed parts of the body at the site of sand fly bite. After an incubation period of less

than two months in *L. major* and more than two months in *L. tropica* a red furuncle like papule appears. The papule gradually enlarges in size over a period of several weeks and assumes a dusky violaceous hue and eventually becomes crusted with a shallow underlying ulcer and indurated borders. Healing usually takes place in 2-6 months in *L. major* infection and 8-12 months in *L. tropica* with a scar that is typically atrophic, hyper pigmented and irregular.[1-4] There is a wide range of clinical forms of leishmaniasis in Old World CL. The host's immune responses are important for protection against or elimination of parasites. On one end of the spectrum of CL is the classical oriental sore in which spontaneous cure and immunity to re-infection as result of effective parasiticidal mechanism while the other end of spectrum reflects the diffuse cutaneous leishmaniasis, where metastatic cutaneous lesions develop and patient rarely develops immunity to the parasite.[5,6] In recent times, there has been an increase in the number of reports for new and rare variants of cutaneous leishmaniasis both in Old and the New World.[7,8] Children are commonly affected by CL in endemic areas (up to 60–70% of the total population). The increasing number of cases among the pediatric population may be due to malnutrition, lack of cutaneous leishmaniasis – specific immunity, poverty, peridomestic anthroponotic transmission, lack of awareness and poor protection of pediatric population. Disease can significantly impact child's physical, emotional, and overall health development and these children usually isolated from social activities.[9-12]

The present study is aimed to explore clinical spectrum of CL in children of southern region of Pakistan. Diversity in clinical symptoms may sometimes be mistaken for other conditions, leading to incorrect diagnoses. Raising awareness about the typical and atypical presentations of cutaneous leishmaniasis will help healthcare professionals make more accurate diagnoses and provide appropriate treatment.

Methods

This was an observational prospective study which was conducted in three tertiary care hospitals (Combined Military Hospital Malir Karachi, PNS Shifa hospital Karachi and Altibri medical college Isra University Karachi campus for five years from Jan 2019 to Dec 2023). All Infants and children up to the age of 15 years, who reported during above-mentioned period having lesions clinically suggestive of CL anywhere on the body, were included in the study. All patients belonged to the southern region of the country (parts of Sind and Baluchistan provinces). Various demographical features (age, sex, geographic location, lesion location, number and size of lesions and clinical patterns) were recorded in all cases and subsequently categorized accordingly. Diagnosis was based on history of origin of the patient (endemic areas), and clinical characteristics of the lesions (painless, non-itchy, slowly evolving nodule, plaque or ulcer on exposed areas of the body, not responding to conventional therapies). Provisional clinical diagnosis was made after opinion of two independent experienced consultant dermatologists and slit skin smear. Patients who received some definitive treatment for CL were excluded. Patients who had lesions with apparent infections were first treated with short course of antibiotics and were again reassessed before inclusion. Doubtful diagnosis declared at least by one consultant dermatologist were then subjected to slit skin smear (SSS), fine needle aspiration cytology smears (FNACS) and skin biopsy. Skin biopsy was done in doubtful cases only. A separate proforma was filled for each patient. Various demographical features and clinical patterns of the lesions were recorded in all cases and subsequently categorized. Computer program SPSS version 22 was used to manage and analyze data. Descriptive statistics (frequencies and percentages) were obtained for the qualitative variables. Mean and standard deviation were calculated for quantitative variables.

Results

During the study period, a total of 316 patients of CL were seen.72 cases (23%) were of childhood CL. Age range was 4 months to 15 years (mean age = 8.47 +\- 4.72). Male to female ratio was

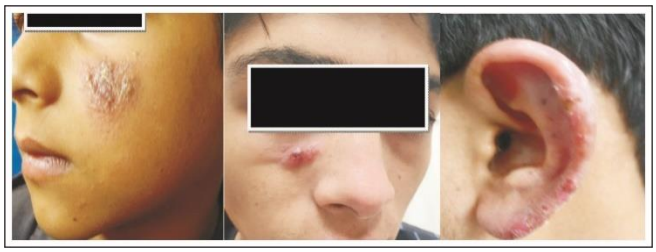

Figure 1-a: Psoriasifirm. **Figure 1-b:** Furunculoid. **Figure 1-c:** Auricular.

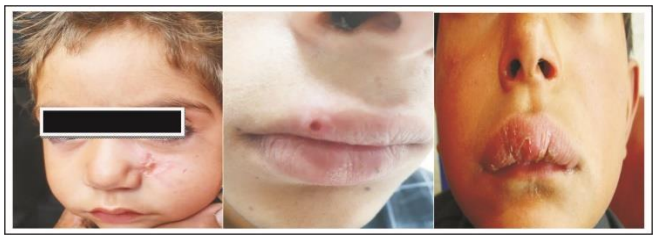

Figure 1-d: Lupoid **Figure 1-e:** Chancriform **Figure 1-f:** Chelitis

Figure 1-a-f: Various clinical morphologies in childhood cutaneous Leishmaniasis.

Table-1: *Demographic and clinical features of the patients.*

No	Parameters	Distribution	Percentage
	Age	0-5	23 (32%)
		6-10	31 (43%)
		11-14	18 (25%)
	Gender	Male	44 (61%)
		Female	28 (39%)
	Geographical origin	Urban	25 (35%)
		Semi-urban	31 (43%)
		Rural	16 (22%)
	Duration	1-4 weeks	40 (56%)
		5-8 weeks	21 (29%)
		>8 weeks	11 (15%)
	Number of lesions	1	46 (64%)
		2-5	23 (32%)
		>5	3 (4%)
	Site of lesions	Face:	67 (93%)
		Upper limbs	3 (4%)
		Lower limbs	1 (1.5%)
		Trunk	1 (1.5%)

1.57:1.Majority of the patients (75%) had solitary lesions. Maximum lesion count was >50 in one case. Cheeks were most common sites followed by nose and lips. All children were treated with weekly intralesional injections of meglumine antimonite and duration of treatment ranged from 4 weeks to 16 weeks (mean = 9.53±3.72. All patients responded well to treatment. Predominant clinical pattern was psoriasiform plaque (Fig. 1-a). Other patterns were ulcers, nodules and papules. Some unusual morphologies seen were furunculoid (Fig. 1-b), verruciform, auricular (Fig. 1-c), lupoid (Fig, 1-d), chancriform (Fig. 1-e), cheilitis (Fig. 1-f) and perleche. Nine patients had post inflammatory hypopigmentation, four had hyperpigmentation, three had secondary infection and one child developed milia at the site of healed lesion. Two developed hypertrophic scars while seven had atrophic scarring. Demographic and clinical features of the patients are given in Table-1 and different morphologies are shown in Table-2.

Table-2: Morphological spectrum seen in childhood leishmaniasis

No	Morphological Patterns	No of Patients	Percentage
1.	Psoriasiform	24	33%
2.	Nodular	20	28%
3.	Nodulo-ulcerative	14	19%
4.	Furunculoid	6	8.5%
5.	Cheilitis	3	4%
6.	Chancriform	2	3%
7.	Verroucous	1	1.5%
8.	Lupoid	1	1.5%
9.	Auricular	1	1.5%

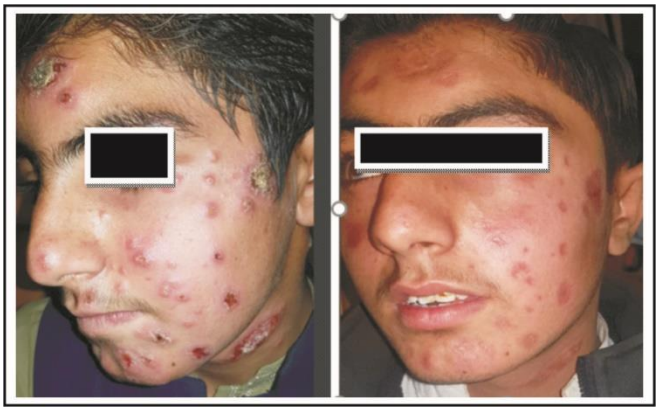

Figure 2-a: **Figure 2-b:**

Figure 2A & 2B: *More than 50 lesions on face (Before and After treatment).*

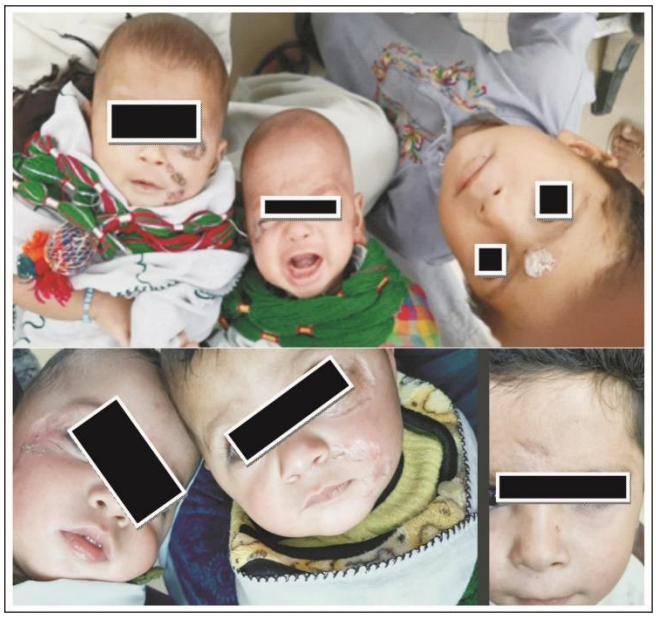

Figure 3A & 3B: Cutaneous leishmaniasis lesions in 3 siblings including twins (Before and After treatment).

Discussion

The clinical picture in leishmaniasis largely depends on the infecting Leishmania species and the host immune response, mediated through cellular immunity. Other influencing factors that affect the diverse clinical picture include the number of parasites inoculated, site of inoculation and nutritional status of the host. Factors such as a non-indigenous individual travelling to endemic areas, old age, coinfection with human immune deficiency virus (HIV), use of oral steroids, and even wound contamination may alter the clinical picture of CL.[6,7]

We found that childhood CL affected all age groups from infants to adolescents. Most common in school going children and outdoor explorers. Surprisingly all patients had cutaneous lesions on their faces. Cheeks and nose were the common locations as expected to be due to maximum exposure and least protected from sandfly bites. Frequent involvement of lip was a little unusual as lips are relatively under exposed and motile parts of face that can provide some protection against vector bites. Most of the lesions were typical solitary small lesions of acute CL and were amicably treated with weekly infiltration of lesions with meglumine antimoniate. Although we encountered few atypical morphologies; like chancriform, cheilitis verruciform and perleche, mostly the pattern was typical of acute CL (psoriasiform plaques, papules and nodules). One case each of chronic (Lupoid) and auricular cutaneous leishmaniasis was observed but no case of mucocutaneous, disseminated or post kala-azar dermal leishmaniasis was seen**.** Most of our observations are in agreement with other related studies but prevalence of the disease in childhood and ratio of facial involvement is higher in our study.[9-11,13] Furuncle like, nodular and psoriasiform morphologies on face can be expected as these do occur in certain other cutaneous disorders too. Cheilitis, chancriform and perleche may be explained on the basis of structural characteristic of lip. Verrucous lesion on face could be due to overt skin response to infectious agent. Exclusive facial involvement could possibly be due to the fact that face remains the exposed part of the body all the time. We encountered >50 skin lesions in one child (Fig, 2-a, b) who responded very well to intramuscular glucan time injection daily for 2 weeks. Despite suspicion, no underlying immune deficiency was found and these unusual numbers of lesions were considered likely to be due to simultaneous bites by multiple sandflies. Another unusual feature in our study was occurrence of facial CL in three siblings, including twins (Fig. 3a,b). In some children CL lesions were initially misdiagnosed as impetigo, furuncle, ecthyma or cellulitis and they reported to us after having no improvement despite courses of oral antibiotics. The standard treatment in our study was intralesional meglumine antimoniate except in one case and we did not face any treatment failure. Complication rate was also low. Most of our observations are in agreement with other related studies but prevalence and ratio of facial involvement is higher in our study.[9-11, 14]

Conclusion

Childhood cutaneous leishmaniasis makes a major portion of CL and its clinical spectrum is different from that of adult. Lesions are characteristically seen on face and respond favorably to

weekly intralesional treatment with antimonial compound.

Ethical Approval: The Institutional Ethical Review Committee of Al-Tibri Medical College and Hospital/Isra University Karachi Campus has approved this study vide ATMC/ IERC/02-2022/ 40.

Conflict of Interest: There was no conflict of interest to be declared by any author.

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Author's Contribution

KNK: Conception & design, acquisition of data, drafting of article.

AUB: Critical revision of the article, final approval of the version to be published.

NA: Analysis & interpretation of data.

SJ: Acquisition of data, analysis & interpretation of data.

MM: Critical revision of the article.

QM: Acquisition of data.

References

1. de Vries HJC, Schallig HD. Cutaneous leishmaniasis: a 2022 updated narrative review into diagnosis and management developments. Am J Clin Dermatol. 2022;23(6):823–840.
2. Karami M, Gorgani-Firouzjaee T, Chehrazi M. Prevalence of cutaneous leishmaniasis in the Middle East: a systematic review and meta-analysis. Trop Med Int Health. 2023;117(4):356–365.
3. Nasiri Z, Kalantari M, Mohammadi J, Daliri S, Mehrabani D, Azizi K. Cutaneous leishmaniasis in Iran: a review of epidemiological aspects, with emphasis on molecular findings. Iran J Parasitol. 2022;29:47.
4. Bari AU. Epidemiology of cutaneous leishmaniasis. J Pak Assoc Dermatol. 2006;16: 156-162.
5. Murray HW, Berman JD, Davies CR, Saravia NG. Advances in leishmaniasis. Lancet. 2005;366(9496): 1561–1577.
6. Rahman S, Bari A. Cellular immune host response in acute cutaneous leishmaniasis. J Coll Physicians Surg Pak. 2005;15:463–466.
7. Bari AU, Rahman SB. Cutaneous leishmaniasis: an overview of parasitology and host–parasite–vector interrelationship. J Pak Assoc Dermatol. 2008;18:42–48.
8. Bari A, Rahman S. Many faces of cutaneous leishmaniasis. J Pak Assoc Dermatol. 2008;18(2):23–27.
9. Bari A. Childhood cutaneous leishmaniasis. J Pak Assoc Dermatol. 2008;18(2):73–78.
10. Rather S, Yaseen A, Shah F, Wani M, Krishan K, Zirak S, et al. Pediatric cutaneous leishmaniasis: a clinico-epidemiological study from North India. Indian J Dermatol. 2021;66(6):852–859.
11. Lu C, Khan K, Khan F, Shah S, Jamal M, Badshah N. Epidemiology of cutaneous leishmaniasis in children of Khyber Pakhtunkhwa, Pakistan. Trop Med Int Health. 2024; 29(7):633–646.
12. Aksoy M, Doni N, Ozkul HU, Yesilova Y, Ardic N, Yesilova A, et al. Pediatric cutaneous leishmaniasis in an endemic region in Turkey: a retrospective analysis of 8786 cases during 1998–2014. PLoS Negl Trop Dis. 2016;10(7): e0004835.
13. Suprien C, Rocha P, Teixeira M, Carvalho L, Guimaraes L, Bonvoisin T, et al. Clinical presentation and response to therapy in children with cutaneous leishmaniasis. Am J Trop Med Hyg. 2020; 102(4):777–781.
14. Feiz-Haddad M, Kassiri H, Kasiri N, Panahandeh A, Lotfi M. Prevalence and epidemiologic profile of acute cutaneous leishmaniasis in an endemic focus, Southwestern Iran. Journal of Acute Diseases. 2015;4(4):292–297.