

Assessment of clinicopathologic features of patients with cutaneous leishmaniasis: A tertiary care centre study

Anand Nagalika¹, Rashmi Chandragouda Meti^{2*}

^{1,2}Associate Professor, ¹Dept. of Pathology, ²Dept. of Microbiology, ¹ESIC Medical College, Gulbarga, Karnataka, ²Kamineni Institute of Medical Sciences, Narketpalli, Telangana, India

*Corresponding Author: Rashmi Chandragouda Meti

Email: anagalika@gmail.com

Received: 13th June, 2018

Accepted: 9th July, 2018

Abstract

Introduction: Cutaneous Leishmaniasis (CL) is a widespread parasitic skin pathology happening due to *Leishmania tropica* and *Leishmania minor*. Hence; we planned the present study to assess the clinic-pathologic features of patients with CL.

Materials and Methods: We planned the current investigation to clinic-pathologic assess cutaneous Leishmaniasis cases affecting a known population. 35 cases of cutaneous Leishmaniasis were included in the present study. Detailed demographic and clinical data of all the subjects was summarized. Clinical examination was thoroughly done in all the subjects. 5 µm sections were obtained and were stained with H and E stain and Giemsa stain. All the sections were evaluated by experienced Pathologists. Analysis of all the results was done by SPSS software.

Results: In the present study, we observed that hyperkeratosis was the predominant epidermal finding found to be present in 22 patients, followed by parakeratosis and acanthosis. Common dermal findings found in the present study were granuloma formation, lymphocyte aggregation and necrosis. Plasma cells and eosinophil leukocytes were also seen.

Conclusion: CL represents a broad spectrum of clinic-pathologic variety, and it might mimic other inflammatory pathologies.

Keywords: Clinical, Cutaneous Leishmaniasis, Pathologic.

Introduction

Leishmaniasis is a vast word for anthropological zoonotic pathologies due to trypanosomes of the genus *Leishmania*.¹⁻³ American tegumentary leishmaniasis (ATL) is manifested as a group of clinical features, including asymptomatic manifestation, cutaneous leishmaniasis (CL), mucosal leishmaniasis, and disseminated leishmaniasis.^{4,5} CL is the major clinical manifestation of the pathology and it is categorized by one or added well-limited ulcerative lesion with elevated boundaries, which are formed at the area of the bite of infectious sandfly.^{6,7} Transmission of the disease occurs due to Sandfly.⁸ Hence; we planned the present study to assess the clinic-pathologic features of patients with CL.

Materials and Methods

We planned the current investigation in the Department of Pathology, ESIC Medical College, Gulbarga, Karnataka (India) and it included clinic-pathologic evaluation of cutaneous Leishmaniasis cases affecting a known population.

Sample Size: 35 cases of cutaneous Leishmaniasis

Inclusion Criteria

1. Subjects reporting to the tertiary care centre with clinic-pathologic diagnosis of cutaneous Leishmaniasis,
2. Subjects within the age group of 18 years to 50 years.

Exclusion Criteria

1. Subjects with history of any other co-morbid condition,
2. Subjects with any known drug allergic reaction,
3. Subjects with presence of any other cutaneous pathology

Methodology

A total of 35 cases of leishmania amastigotes, as diagnosed with skin biopsy were included in the present study. All the cases reported to the tertiary care centre of the institute. Detailed demographic and clinical data of all the subjects was summarized. Clinical examination was thoroughly done in all the subjects. 5 µm sections were obtained and were stained with H and E stain and Giemsa stain. All the sections were evaluated by experienced Pathologists. Analysis of all the results was done by SPSS software. Univariate regression curve was used for assessment of level of significance.

Results

Hyperkeratosis was the predominant epidermal finding found to be present in 22 patients, followed by parakeratosis and acanthosis. Other epidermal findings observed in the present study were Pseudoepitheliomatous hyperplasia, epidermal atrophy, ulcerations etc. Common dermal findings found in the present study were granuloma formation, lymphocyte aggregation and necrosis. Plasma cells and eosinophil leukocytes were also seen.

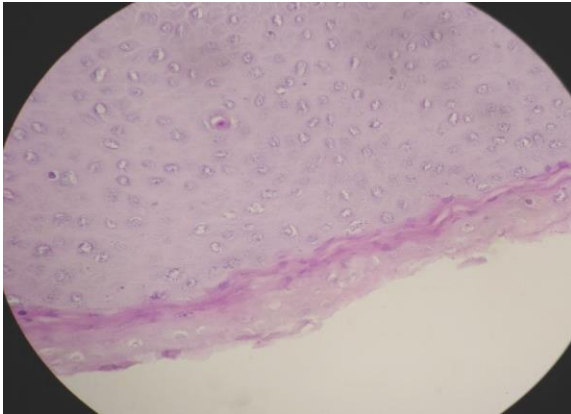


Fig. 1: Hyperkeratosis with parakeratosis



Fig. 2: Hyperkeratosis, parakeratosis and acanthosis

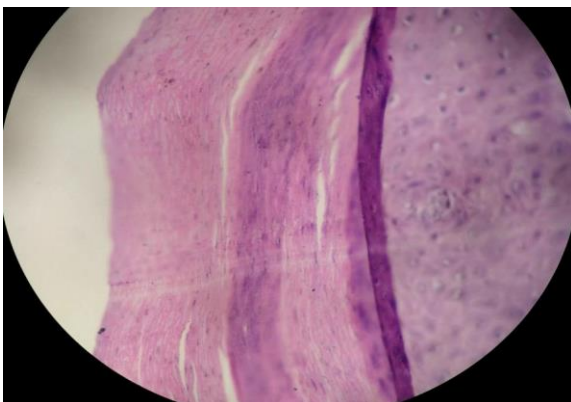


Fig. 3: Hyperkeratosis with parakeratosis

Table 1: Epidermal pathologic description of the patients of present study

Epidermal findings	Number of cases
Hyperkeratosis	22
Parakeratosis	15
Acanthosis	14
Pseudoepitheliomatous hyperplasia	12
Epidermal atrophy	8
Ulceration	7
Others	4

Table 2: Dermal pathologic description of the patients of present study

Dermal findings	Number of cases
Granuloma	20
Necrosis	21
Lymphocyte	35
Plasma cells	18
Eosinophil leukocytes	10
Others	6

Discussion

In the present study, we observed that hyperkeratosis was the predominant epidermal finding found to be present in 22 patients, followed by parakeratosis and acanthosis. Other epidermal findings observed in the present study were Pseudoepitheliomatous hyperplasia, epidermal atrophy, ulcerations etc. In one of the past studies conducted by Başsorgun Cİ et al, authors evaluated the clinic-pathologic profile of the dermal pathologic manifestation of CL. A total of 28 subjects, who were diagnosed with CL were included in their study. They hired two separate and experienced dermatologists for assessment of the patients. They observed that hyperkeratosis, orthokeratosis and acanthosis occurred in 11, 17 and 20 patient respectively. From the above results, the authors concluded that atrophy, acanthosis, and orthokeratosis are initial indicators, while exocytosis, hyperparakeratosis, and atrophy were suggestive of late stage pathology.⁹ Sharquie KE et al, in another study, evaluated the pathologic picture of CL. At the same time, they also evaluated the incidence of panniculitis in between the same patients. A total of 35 subjects, which were diagnosed with CL, were analyzed in their study. All the cases included in their study were diagnosed with PCR. In their study, the incidence of Panniculitis was found to be 46%. Panniculitis manifested as diffuse lymphohistiocytic invasion.¹⁰ Martín-Ezquerro G et al investigated the useful value of Leishmania-particular polymerase chain response (PCR) enhancement and immunohistochemical procedures in skin biopsy examples. Twenty-five skin biopsies analyzed as nonspecific granulomatous dermatoses were incorporated into the examination. A board of histopathological highlights was indiscriminately assessed by two free spectators. Just those cases indicating nondiagnostic clinicopathological includes and lacking self-evident microorganisms after bacteriological, mycological or mycobacteriological societies and particular stains (Ziehl-Neelsen, Giemsa, Gram, intermittent corrosive Schiff stains) were at long last chosen. Quantitative continuous PCR was performed in every chosen test. In accessible examples, immunohistochemical location of particular Leishmania spp. antigens was likewise performed. From the chose 25 biopsies, Leishmania spp. DNA was distinguished by ongoing PCR in 13 cases. In seven of eight PCR-positive cases the nearness of a fluctuating thickness of amastigotes could likewise be exhibited immunohistochemically. Leishmania disease is by all accounts a vital aetiological factor in cutaneous granulomatous sores demonstrating nondiagnostic includes in endemic areas.¹¹ Leishmaniasis

represent a pleiotropic syndrome due to genus *Leishmania*. Manifestation as tegumentary or visceral leishmaniasis is primarily responsible for the clinical classification of the disease. Novais FO et al, in one of the past studies evaluated the role of CD8⁺ T cells in pathogenesis of illness in murine models. From the results, they concluded that cytolytic CD8⁺ T cells interfere immunopathology and force the upgrading of neoplastic sores in cutaneous leishmaniasis.¹² Koçarlan S et al researched the clinical and histopathological attributes of cutaneous leishmaniasis (CL) in the city of Sanliurfa in Turkey, where Syrian displaced people likewise dwell. At the Harran University Hospital outpatient centers in the vicinity of 2012 and 2013, 54 CL cases, including 24 Syrian patients, experienced punch biopsy of the skin or potentially a touch engrave. Patients in whom leishmania parasites were identified were incorporated into the investigation. The clinical and histopathological information of the patients were gotten by an audit of the patients' restorative records. Each slide of every patient was reconsidered histopathologically. Fifty-four cases (mean age; 17 ± 12 years), comprising of 32 guys (59.3%) and 22 females (40.7%), were analyzed. The most widely recognized site of association was the face (63%). The most widely recognized introduction was noduloulcerative sores (57.4%). Histopathologically, most of the cases showed hyperkeratosis, follicular stopping of the epidermis, interminable incendiary penetration, leishmania amastigotes and non-caseating granulomatous irritation in the dermis. CL presents with a wide range of articulation, both clinically and histologically, and may emulate other fiery and neoplastic illnesses. The conclusion of CL depends on the distinguishing proof of leishmania amastigotes in either an immediate spread of the injury or in a tissue section.¹³ In another study, conducted by Mayrink et al, authors evaluated the treatment effectiveness of chemo-, immune- or combination therapy, and observed similar effect of the combined therapy and the standard treatment.¹⁴

Viana AG et al evaluated the histopathologic profile of CL patients. They also evaluated the change occurring in patient after commencement of therapeutic treatment. They evaluated a total of 23 patients and divided them broadly into following study groups: Glucantime, Glucantime + Leishvacin and Glucantime + Leishvacin associated with Bacillus Calmette-Guerin. Under the light of above mentioned data, the authors concluded that coincidence of clinical cure does not always exists histopathological one.¹⁵ Andrade-Narvaez FJ et al, in another study, assessed the pathological confirmed of Localized Cutaneous Leishmaniasis (LCL) and observed positive identification in 68.5 percent of the cases.¹⁶ American cutaneous leishmaniasis (ACL) characterizes a public health problem in Brazil. In place of tartar emetic, Pentavalent antimony was presented as a substitute.¹⁴ Positive identification of the etiologic species of the parasitic organism of required for the accurate diagnosis of CL. Continued dissemination of the parasite results in failure to promptly diagnose and treatment of the cases. Data from the recent literature shows

that new *Leishmania* foci has emerged along with coexistence of multiple *Leishmania* species.^{13,14}

Conclusion

Under the light of above evidence, the authors conclude that CL represents a broad spectrum of clinic-pathologic variety, and it might mimic other inflammatory pathologies. However; further studies are recommended in this field for better exploration of results.

Conflict of Interest: None.

References

1. Machado P, Araújo C, Da Silva AT, Almeida RP, D'Oliveira A, JR, Bittencourt A, Carvalho EM. Failure of early treatment of cutaneous leishmaniasis in preventing the development of an ulcer. *Clin Infect Dis* 2002;34:E69-E73.
2. Unger A, O'Neal S, Machado PR, Guimarães LH, Morgan DJ, Schriefer A, Bacellar O, Glesby MJ, Carvalho EM. Association of treatment of American cutaneous leishmaniasis prior to ulcer development with high rate of failure in northeastern Brazil. *Am J Trop Med Hyg* 2009;80:574-579.
3. Venkataram M, Moosa M, Devi L. Histopathological spectrum in cutaneous leishmaniasis: A study in Oman. *Indian J Dermatol Venereol Leprol* 2001;67:294-298.
4. Jordan KA, Hunter CA. Regulation of CD8+ T cell responses to infection with parasitic protozoa. *Exp Parasitol* 2010;126:318-325.
5. Barral A, Costa JM, Bittencourt AL, Barral-Netto M, Carvalho EM. Polar and subpolar diffuse cutaneous leishmaniasis in Brazil: Clinical and immunopathologic aspects. *Int J Dermatol* 1995;34:474-479.
6. Ortega C, Fernandez AS, Carrillo JM, Romero P, Molina JJ, et al. IL-17-producing CD8+ T lymphocytes from psoriasis skin plaques are cytotoxic effector cells that secrete Th17-related cytokines. *J Leukoc Biol* 2009;86:435-443.
7. Mehregan DR, Mehregan AH, Mehregan DA. Histologic diagnosis of cutaneous leishmaniasis. *Clin Dermatol* 1999;17:297-304.
8. Yücel A1, Günaştı S, Denli Y, Uzun S. Cutaneous leishmaniasis: new dermoscopic findings. *Int J Dermatol* 2013;52(7):831-837. doi: 10.1111/j.1365-4632.2012.05815.x.
9. Başsorgun Cİ1, Ünal B, Karakaş AA, Alpsoy E, Çiftcioglu MA, Uzun S. Clinicopathological evaluation of cutaneous leishmaniasis in the mediterranean region of Turkey. *Turk Patoloji Derg* 2015;31(2):126-30. doi: 10.5146/tjpath.2015.01300.
10. Sharquie KE1, Hameed AF, Noaimi AA. Panniculitis is a common unrecognized histopathological feature of cutaneous leishmaniasis. *Indian J Pathol Microbiol* 2016;59(1):16-9. doi: 10.4103/0377-4929.178216.
11. Martín-Ezquerro G1, Fisa R, Riera C, Rocamora V, Fernández-Casado A, Barranco C, Serra T, Baró T, Pujol RM. Role of *Leishmania* spp. infestation in nondiagnostic cutaneous granulomatous lesions: report of a series of patients from a Western Mediterranean area. *Br J Dermatol* 2009;161(2):320-325. doi: 10.1111/j.1365-2133.2009.09282.x. (Epub 2009 Jun 4).
12. Novais FO1, Carvalho LP, Graff JW, Beiting DP, Ruthel G, Roos DS, Betts MR, Goldschmidt MH, Wilson ME, de Oliveira CI, Scott P. Cytotoxic T cells mediate pathology and metastasis in cutaneous leishmaniasis. *PLoS Pathog* 2013;9(7):e1003504. doi: 10.1371/journal.ppat.1003504. (Epub 2013 Jul 18)
13. Koçarlan S, Turan E, Ekinci T, Yesilova Y, Apari R. Clinical and histopathological characteristics of cutaneous

- Leishmaniasis in Sanliurfa City of Turkey including Syrian refugees. *Indian J Pathol Microbiol* 2013;56:211-215.
14. Mayrink W, Botelho ACC, Magalhães PA, Batista SM, Lima AOI, Genaro O, et al. Immunotherapy, immunochemotherapy and chemotherapy for American cutaneous leishmaniasis treatment. *Rev Soc Bras Med Trop* 2006;39:14–21.
 15. Viana AG, Mayrink W, Fraga CA de C. Histopathological and immunohistochemical aspects of American cutaneous leishmaniasis before and after different treatments. *Anais brasileiros de dermatologia* 2013;88(1):32-40.
 16. Andrade-Narvaez FJ1, Medina-Peralta S, Vargas-Gonzalez A, Canto-Lara SB, Estrada-Parra S. The histopathology of

cutaneous leishmaniasis due to *Leishmania (Leishmania) mexicana* in the Yucatan peninsula, Mexico. *Rev Inst Med Trop Sao Paulo* 2005;47(4):191-4. (Epub 2005 Aug 29).

How to cite this article: Nagalika A, Meti RC. Assessment of clinicopathologic features of patients with cutaneous leishmaniasis: A tertiary care centre study. *Indian J Pathol Oncol* 2019;6(1):98-101.