American Journal of Medicine and Medical Sciences 2026, 16(5): 2651-2654
DOI: 10.5923/j.ajmms.20261605.80

Dermoscopic-Histopathological Correlation Across Disease Stages of Cutaneous Lichen Sclerosus: A Single-Center Observational Study

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Abstract Purpose: To identify stage-specific dermoscopic patterns of cutaneous lichen sclerosus (LS) and correlate them with histopathological changes. Methods: The manuscript is based on a dissertation study of 60 patients with LS (30 women and 30 men) examined clinically, dermoscopically and histologically. Representative lesions were additionally analyzed according to inflammatory, inflammatory-sclerotic, sclerosis, and scleroatrophic patterns. Results: Active lesions were characterized by erythematous foci, red focused vessels, linear irregular vessels and dotted vessels, together with bright white or yellow-white areas. In the inflammatory-sclerotic pattern, erythematous foci were present in 92%, red focused vessels in 80%, dotted vessels in 56%, and linear irregular vessels in 36% of representative lesions, while bright white/yellow-white areas and yellow-white keratotic follicular plugs were each found in 100%. More advanced lesions showed increasing dominance of crystalline structures, white structureless zones, keratotic plugs, and reduced vascular density. Histologically, the progressive stage corresponded to vacuolar interface dermatitis with a dense lichenoid infiltrate, whereas the chronic stage showed dense fibrosis of the papillary dermis and sclerosis with a lower inflammatory burden. Conclusion: Dermoscopy reflects stage-dependent structural changes in LS and can guide non-invasive staging, biopsy targeting and differential diagnosis.

Keywords Lichen sclerosus, Dermoscopy, Histopathology, Stage-specific changes, Differential diagnosis, Morphea

1. Introduction

Lichen sclerosus (LS) is a chronic inflammatory and fibroatrophic dermatosis that predominantly affects the anogenital region, although extragenital lesions may also occur [1-4]. Despite the availability of clinical diagnostic criteria, early lesions may mimic vitiligo, leukoplakia, lichen planus, chronic eczema or morphea, which delays diagnosis and postpones treatment [1,4,5]. Dermoscopy is increasingly used as a bedside method for recognizing LS, identifying activity-related vascular clues and selecting the most informative site for biopsy [5-8].

The dissertation on which this manuscript is based addressed a clinically important gap: the relationship between dermoscopic changes and the underlying histopathological stage of the disease. The main practical question is whether dermoscopy can separate active inflammatory lesions from fibrosing and scleroatrophic lesions and therefore improve both diagnosis and stage-oriented management. The objective of the present article was to analyze the dermoscopic-histopathological correlation in cutaneous LS and to summarize the stage-specific patterns observed in the cohort.

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Received: Apr. 12, 2026; Accepted: May 10, 2026; Published: May 27, 2026
Published online at http://journal.sapub.org/ajmms

2. Materials and Methods

The study included 60 patients with lichen sclerosus, comprising 30 women with vulvar lesions and 30 men with penile lesions. All patients underwent clinical examination, dermoscopic assessment, and histopathological evaluation of biopsy specimens. Immunohistochemical findings were not the primary focus of the present study and are discussed only insofar as they support the interpretation of disease stage.

Dermoscopy was performed using a Heine dermatoscope. The examination protocol included assessment of inflammatory vascular structures, bright white and yellow-white areas, crystalline structures, follicular keratotic plugs, pigmented structures, erosions, and hemorrhagic spots. In addition to the analysis of the entire cohort, representative lesions were classified into inflammatory, inflammatory-sclerotic, sclerotic,

and scleroatrophic patterns. Histopathological evaluation was performed according to Ackerman's inflammatory pattern framework, with particular emphasis on vacuolar and lichenoid interface dermatitis, as well as superficial fibrosing dermatitis. The present article reports the validated descriptive and comparative findings.

3. Results

A stable dermoscopic background across disease stages consisted of bright white or yellow-white structureless areas corresponding to sclerosis and hyalinization. However, the vascular component and ancillary structures changed substantially according to lesion activity. In inflammatory lesions, erythematous foci were present in all representative lesions, whereas red focused vessels, branching linear vessels, linear irregular vessels and crystalline structures were each found in one third. Yellow-white keratotic follicular plugs and hemorrhagic spots were documented in two thirds of these early active lesions.

The inflammatory-sclerotic pattern showed the most pronounced vascular activation. Erythematous foci were seen in 23/25 representative lesions (92%), red focused vessels in 20/25 (80%), dotted vessels in 14/25 (56%), and linear irregular vessels in 9/25 (36%). Bright white/yellow -white areas and yellow-white keratotic follicular plugs were both detected in 25/25 lesions (100%). Crystalline structures were present in 8/25 (32%), while limited erosions and rainbow effect were observed in 2/25 lesions (8%) each. This constellation indicates ongoing inflammatory activity superimposed on early sclerosis.

In the sclerosis pattern, vascular signs became less prominent, with erythematous foci in 2/15 lesions (13.3%), red focused vessels in 4/15 (26.7%), linear irregular vessels in 4/15 (26.7%), and dotted vessels in 2/15 (13.3%). By contrast, crystalline structures increased to 8/15 (53.3%), while bright white/yellow-white areas and follicular keratotic plugs remained present in 15/15 lesions (100%). The scleroatrophic pattern was dominated by crystalline structures in 5/10 lesions (50%), bright white/yellow-white areas in 8/10 (80%), defocused large purple vessels in 7/10 (70%), and yellow structureless areas in 3/10 (30%), confirming advanced stromal remodeling and atrophy.

Histopathological examination of the 60-patient cohort demonstrated that progressive-stage LS corresponded to vacuolar interface dermatitis with a dense lichenoid infiltrate, vacuolar degeneration of basal keratinocytes, epidermal exocytosis of lymphocytes, and early collagen homogenization. Chronic-stage LS was characterized by dense fibrosis of the papillary dermis, dermal sclerosis, reduced inflammatory infiltrate, and architectural simplification. Thus, active dermoscopic vascular signs paralleled the interface-inflammatory pattern, whereas white structureless zones, crystalline structures and reduced vessel density paralleled fibrosis and sclerosis.

Comparative dermoscopic analysis also supported the differential diagnosis with morphea. In the dissertation dataset, yellow-white keratotic follicular plugs and hemorrhagic spots were much more characteristic of LS, whereas pigmented structures and brown structureless areas were more frequent in morphea. This supports the practical value of dermoscopy when the clinical picture is equivocal, especially in pale or fibrosing lesions where naked-eye assessment may be misleading.

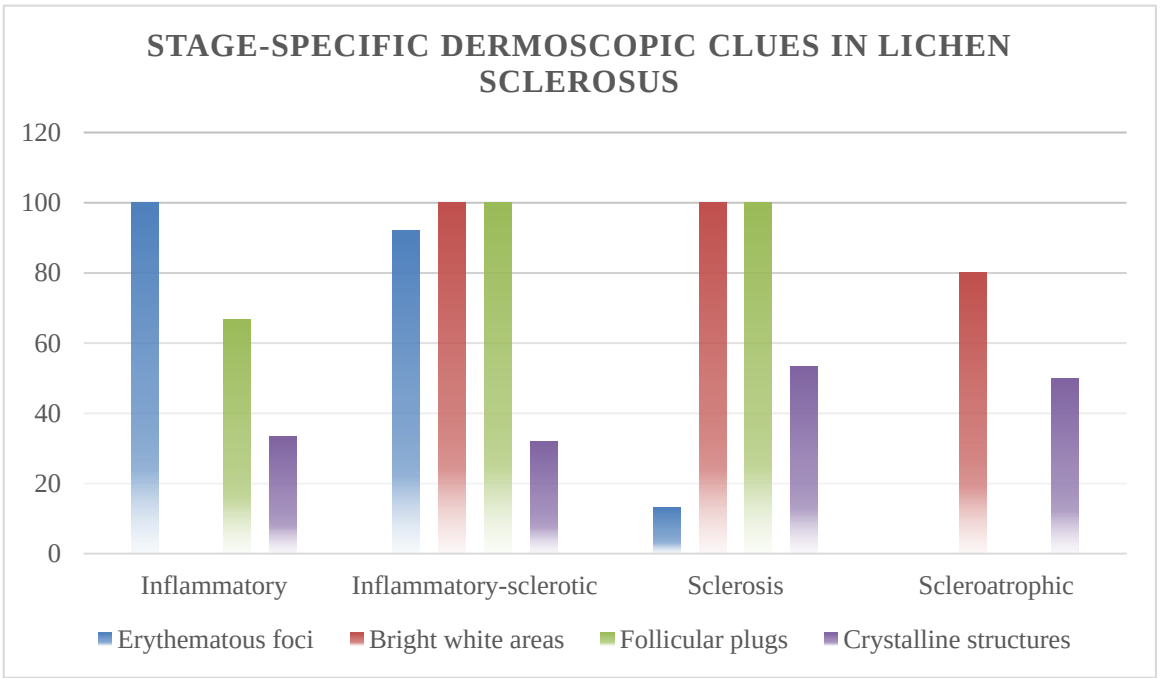

Figure 1. Stage-specific dermatoscopic signs of scleroatrophic lichen

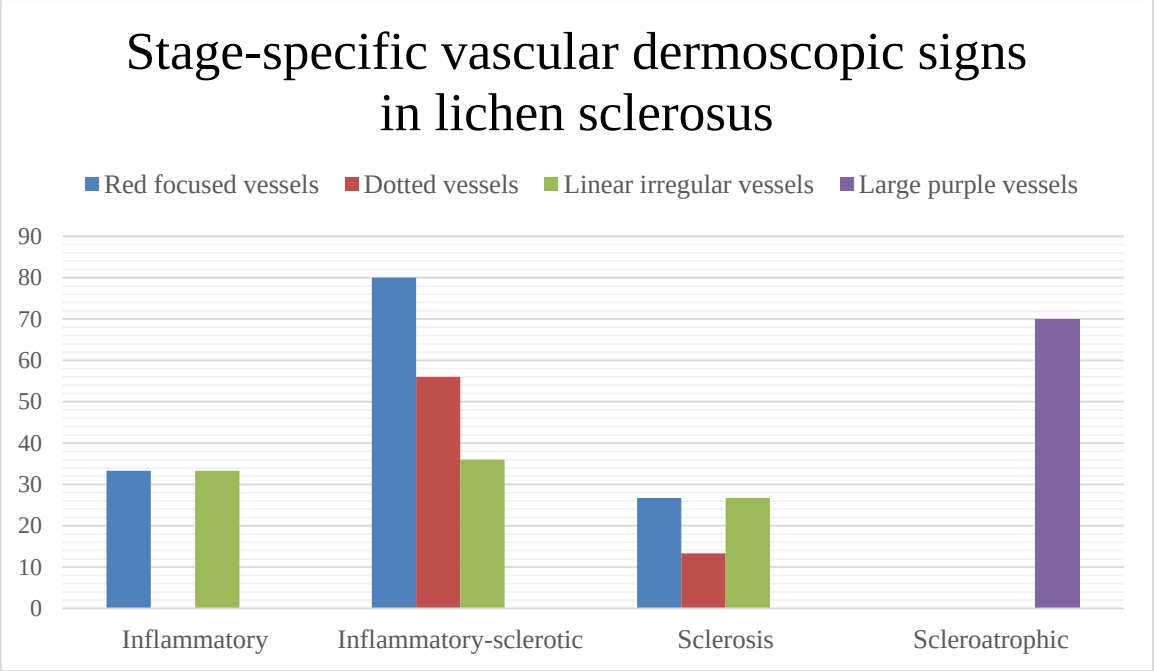

Figure 2. Vascular dermatoscopic features of lichen sclerosus et atrophicus depending on the stage of the disease

Table 1. Stage-oriented dermoscopic and histopathological correlates in lichen sclerosus

Pattern / stage	Predominant dermoscopic clues	Representative frequencies	Histopathological correlate
Inflammatory	Erythematous foci; red focused, branching and irregular linear vessels; early crystalline structures	Erythematous foci 100%; hemorrhagic spots 66.7%; follicular plugs 66.7%	Vacuolar interface dermatitis with lichenoid inflammation
Inflammatory-sclerotic	White/yellow-white areas plus active vascular signs and dotted vessels	Erythematous foci 92%; red focused vessels 80%; dotted vessels 56%; linear irregular vessels 36%; bright white areas and follicular plugs 100%	Active interface dermatitis with collagen homogenization and inflammatory infiltrate
Sclerosis	Crystalline structures, persistent white areas, lower vascular density	Crystalline structures 53.3%; bright white areas 100%; follicular plugs 100%	Papillary dermal fibrosis and sclerosis
Scleroatrophic	Crystalline structures, large defocused purple vessels, yellow structureless areas	Large purple vessels 70%; bright white areas 80%; crystalline structures 50%	Advanced sclerosis and atrophy

**Note: The reported frequencies correspond exactly to those documented for representative lesion groups at different disease stages in the original study material.*

4. Discussion

The present findings are consistent with published work showing that white structureless areas, follicular plugging and activity-related vascular structures are core dermoscopic clues of LS [5-8]. The distinctive value of dermoscopy in LS lies not only in diagnosis but also in biologic staging. The prominent vascular component in active lesions probably reflects endothelial activation and microvascular remodeling, whereas the later reduction of inflammatory vessels with persistence of white and crystalline clues reflects collagen remodeling and sclerosis [1,2,6,9].

A clinically relevant implication is biopsy targeting. Early erythematous or vascular lesions can be histologically subtle, while advanced sclerotic plaques may mainly show fibrosis. Dermoscopy helps select lesions with both active and diagnostic morphology and therefore improves clinicopathological concordance. It also helps identify lesions that warrant closer surveillance because new erosions, ulceration, bleeding and proliferating atypical vessels may indicate an unfavorable course or malignant progression [8-10].

The main strength of this study is the direct integration of bedside dermoscopy with validated histopathology in a sex-balanced cohort. The main limitation is that the work was performed in a single center and the stage-specific dermoscopic analysis was based on representative lesions rather than a prospective longitudinal imaging protocol. Even so, the observed stage gradient is internally coherent and clinically applicable.

5. Conclusions

Dermoscopy in LS is not merely an adjunctive imaging

technique. It reflects stage-specific biological changes, improves non-invasive recognition of disease activity, supports differential diagnosis with morphea and other white dermatoses, and assists in rational biopsy selection. Active LS is characterized by erythematous foci and polymorphous vessels on a white background, whereas chronic lesions show dominant white/yellow-white areas, crystalline structures and follicular plugs that correspond to fibrosis and sclerosis.

REFERENCES

[1] De Luca DA, Papara C, Vorobyev A, Staiger H, Bieber K, Thaci D, et al. Lichen sclerosus: The 2023 update. Front Med (Lausanne). 2023; 10: 1106318. doi: 10.3389/fmed.2023.1106318.

[2] Xie X, Wu K. Advances in the pathogenesis of vulvar lichen sclerosus. Mol Biol Rep. 2024; 51(1): 396. doi: 10.1007/s11033-024-09318-7.

[3] Krapf JM, Mitchell L, Holton MA, Goldstein AT. Vulvar lichen sclerosus: Current perspectives. Int J Womens Health. 2020; 12: 11-20. doi: 10.2147/IJWH.S191200.

[4] Yeon J, Oakley A, Olsson A, Drummond C, Veysey E, Marshman G, et al. Vulval lichen sclerosus: An Australasian management consensus. Australas J Dermatol. 2021; 62(3): 292-299. doi: 10.1111/ajd.13594.

[5] Larre Borges A, Tiodorovic-Zivkovic D, Lallas A, Forgiarini C, Moscarella E, Longo C, et al. Clinical, dermoscopic and histopathologic features of genital and extragenital lichen sclerosus. J Eur Acad Dermatol Venereol. 2013; 27(11): 1433-1439. doi: 10.1111/j.1468-3083.2012.04595.x.

[6] Errichetti E, Lallas A, Apalla Z, Di Stefani A, Stinco G. Dermoscopy of morphea and cutaneous lichen sclerosus: Clinicopathological correlation study and comparative analysis. Dermatology. 2017; 233(6): 462-470. doi: 10.1159/000484947.

[7] Borghi A, Corazza M, Minghetti S, Bianchini E, Virgili A. Dermoscopic features of vulvar lichen sclerosus in the setting of a prospective cohort of patients: New observations. Dermatology. 2016; 232(1): 71-77. doi: 10.1159/000439198.

[8] Mahajan SA, Dave JS. Dermoscopic evaluation of extragenital lichen sclerosus et atrophicus. Dermatol Pract Concept. 2022; 12(3): e2022125. doi: 10.5826/dpc.1203a125.

[9] Regauer S, Liegl B, Reich O. Early vulvar lichen sclerosus: A histopathological challenge. Histopathology. 2005; 47(4): 340-347. doi: 10.1111/j.1365-2559.2005.02209.x.

[10] Micheletti L, Preti M, Radici G, Boveri S, Di Pumpo O, Privitera SS, et al. Vulvar lichen sclerosus and neoplastic transformation: A retrospective study of 976 cases. J Low Genit Tract Dis. 2016; 20(2): 180-183. doi: 10.1097/LGT.0000000000000186.

[11] Lee A, Bradford J, Fischer G. Long-term management of adult vulvar lichen sclerosus: A prospective cohort study of 507 women. JAMA Dermatol. 2015; 151(10): 1061-1067. doi: 10.1001/jamadermatol.2015.0643.

[12] Huisman BW, Bercot F, van den Akker B, et al. Dermatoscopy and optical coherence tomography in vulvar lichen sclerosus: A feasibility study. Front Med (Lausanne). 2023; 10: 1188242. doi: 10.3389/fmed.2023.1188242.