

Dermoscopy of Actinic Lichen Planus in Skin of Color

Awatef Kelati¹, Asmae Rasso², Soumia Chiheb¹

¹ Dermatology Department, University Hospital Cheikh khalifa, and the University Hospital Mohammed VI. Faculty of Medicine, Mohammed VI University of Health and sciences (UM6SS), Casablanca, Morocco

² Dermatology Department, Provincial Hospital of Tantan, Tantan, Morocco

Key words: Dermoscopy, Actinic lichen planus, skin of color, lichen, lichen planus pigmentosus

Citation: Kelati A, Rasso A, Chiheb S. Dermoscopy of Actinic Lichen Planus in Skin of Color. *Dermatol Pract Concept*. 2024;14(2):e2024101. DOI: <https://doi.org/10.5826/dpc.1402a101>

Accepted: November 12, 2023; **Published:** April 2024

Copyright: ©2024 Kelati et al. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (BY-NC-4.0), <https://creativecommons.org/licenses/by-nc/4.0/>, which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.

Funding: None.

Competing Interests: None.

Authorship: All authors have contributed significantly to this publication.

Corresponding Author: Kelati Awatef, Dermatology Department, University Hospital Cheikh khalifa, and the University Hospital Mohammed VI. Faculty of Medicine, Mohammed VI University of Health and sciences (UM6SS), Casablanca, Morocco. Email: akelati@um6ss.ma

ABSTRACT **Introduction:** Actinic Lichen Planus (ALP) is a rare photosensitive variant of lichen planus. Four subtypes can be distinguished: pigmented, annular (AALP), plaque-like and dyschromic ALP.

Methods: This is a retrospective; descriptive and analytical study investigating the dermoscopic patterns of different subtypes of ALP in skin of color.

Results: Sixteen adult patients were included in this study; the majority of them were young females, while five patients with the pigmented subtype of ALP were more than 50 years old. This subtype was more prevalent in patients with phototype IV. AALP was described in men with a very dark phototype.

In pigmented melasma-like ALP, dermoscopy showed an annular granular pattern, white reticular and circular Wickham striae (WS) with hypopigmentation lacking skin creases, dots inside circles and an eccentric pigmentation on circles. In ALP, annular, circular WS; and perifollicular white halos with follicular plugs were described. The black hole pattern with dotted vessels was seen in the dyschromic ALP. White-yellow-bluish WS were noticed in plaque-type ALP with circumferential radial lines at the periphery.

Conclusions: This descriptive study of dermoscopic patterns of various subtypes of ALP in skin of color highlighted new dermoscopic descriptions that vary according to the clinical variant or the morphology; lesions distribution; and phototype. Also, many epidemiological differences were found between our results and the literature concerning the older age of onset in melasma-like pigmented ALP, and the male predominance in annular ALP.

Introduction

Actinic Lichen Planus (ALP) is a rare photosensitive variant of lichen planus (LP); that is known to occur generally in children and young adults of Middle Eastern countries [1]. It was documented using different terms such as lichen planus tropicus, lichen planus subtropicus, summertime actinic lichenoid eruption [2], and lichen planus actinicus [1]. The etiology is still unknown; however, UV radiation appears to be the major incriminated factor, since it occurs primarily during spring and summer, and involves mainly exposed areas of the skin [3]. The hormonal factor was also suggested, especially in melasma-like pigmented forms which are frequent in women [4].

Lesions are usually asymptomatic and involve sun-exposed areas, like the face; especially the forehead, and the extensor surfaces of upper extremities, mainly the dorsum of the hands [5]. Clinically, four subtypes of ALP can be distinguished: pigmented ALP, annular actinic LP (AALP), plaque-like ALP; and dyschromic ALP [5,6].

Pigmented ALP manifests as *hyperpigmented* (gray, brown, or black) inflammatory macules and *patches on sun exposed areas*, sometimes giving a melasma-like pattern [4], that worsens after sun exposure. AALP manifests as erythematous brown plaques that are annular in configuration, with central atrophy in some cases [5,7]. In the plaque-like type, the lesions are elevated brown-gray plaques, with a depressed brownish center; and an erythematous elevated border [8]. Dyschromic ALP presents as pinhead-sized, whitish angular infiltrated papules that tend to coalesce, forming lesions of 5 to 6 mm in diameter, with a small horny plug in the center, it is generally described on the posterior part of the neck and the dorsum of the hands [4].

Dermoscopy of LP in the skin of color was not fully investigated, Wickham striae (WS) are more difficult to see in dark phototype. Also, their clinical picture may differ due to variations in morphology and configuration, or clinical features modification depending on the site of involvement [9].

In addition, ALP has not been well described, and existing data of skin imaging in this rare variant of LP concerns only few observations of annular ALP, and pigmented ALP with lack of precisions of dermoscopy in the different variants [1,5,10].

Objectives

The main aim of this study was to describe and analyze dermoscopic patterns of different variants of ALP in skin of color.

Methods

A retrospective double-center descriptive and analytical study was performed in the Dermatology Department of the University Hospital Cheikh Khalifa, and the

University Hospital Mohammed VI of Casablanca in Morocco, over a period of 3 months, digital dermoscopic images of dark-skinned patients with ALP- were examined and reviewed by two dermatologists experienced in Dermoscopy.

Subjects

Patients with different subtypes of ALP were enrolled in the study. The diagnosis was based on the morphology and the distribution over photo-exposed areas, with a histological confirmation.

Data Analysis

For each patient, epidemiological and clinical data were collected, including the age and the gender, as well as the phototype, lesions location, morphology and distribution.

Dermoscopic images of the representative lesions were taken using a manual dermoscope (HEINE DELTA 30, or DermLite DL 4) attached to a smartphone or a digital camera, with or without polarized light and with or without immersion.

Variables used in the dermoscopic evaluation were WS (presence or absence), type of WS (radial, reticulate, linear, circular, annular, arboriform, perifollicular and mixed), hypopigmentation lacking skin creases, perifollicular hypopigmentation, pigmented structures (diffuse brown pigmentation, blue-gray and brown dots, eccentric pigmentation on circles), follicular plugs, blood vessels (presence or absence and their morphology), background color, particular structures and patterns (annular granular pattern, black hole pattern, pigmented dots arranged in parallel lines, circumferential radial lines).

The annular-granular pattern was considered as multiple, gray dots and globules around the pilo-sebaceous units [11]. The black hole pattern was considered as grayish-white annular and reticular WS at the periphery of the lesions, and clustered brown-gray dots on a light brown background in the center [12].

Data extraction was performed using Excel software (Microsoft). These data were then analyzed using IBM SPSS Statistics version 20 software (IBM), Descriptive statistics were expressed as means and percentages. All subjects were informed of the conditions related to the study and gave their informed consent.

Results

Sixteen patients were included in this study. The mean age was 39.6 +/- 12.8 years (13-55 years); and the majority of patients (7, 43.8%) were young adults (less than 35 years old), while five (31.3%) subjects with pigmented melasma-like subtype had more than 50 years old.

There was a female predominance (75%); with a male-to-female sex ratio of 0,33. All of our patients had dark phototype (IV 10 (62.5%), V 5 (25%); and VI 2 (12.5%)).

Pruritus was absent in most cases, except in the inflammatory areas where an erythema was noted clinically and upon dermoscopy in three patients.

The most predominant clinical subtype in this study was pigmented ALP in twelve patients (75%) with phototype IV, and a melasma-like pattern in most of them, while a pigmented classic-like ALP pattern (papules and patches) was described in one patient. The melasma-like variant affected the full face in seven (63.6%) patients, the forehead in ten (90.9%) patients, the lower part of the face in eight (72.7) patients, the neck in five (45.4%) patients, and the hands in two patients (18.2%) (Figure 1).

AALP was noticed in two male patients with a very dark phototype (V and VI), body areas involved were the forehead and the dorsal side of the hands (Figure 4). The dyschromic and plaque-like ALP were noticed in one patient each, with

the forehead involvement for the plaque subtype, and the hands involvement in the dyschromic subtype.

Hair involvement was described in seven cases (43.7%), with no associated mucous membrane or nail involvement.

In melasma-like pigmented ALP, dermoscopy showed an annular granular pattern, dots inside circles, and eccentric pigmentation on circles in all the cases. Reticular pigmentation in 90.9%; and hypopigmentation lacking skin creases surrounded by diffuse peppering was described in 81.8% of cases. Peri-follicular hypopigmentation was found in 45.5% of patients, white reticular and arborescent WS surrounded by pigmented areas and brown to gray dots were described in 18.2% of cases.

In AALP and plaque-like ALP, annular and circular white WS surrounded by pigmented areas were described, in addition to reticular pigmentation, follicular plugs, white halo around follicular openings; pigmented dots arranged in parallel lines; and circumferential radial lines at the periphery of some annular plaques.



Figure 1. Pigmented Actinic Lichen Planus. *Hyperpigmented (gray brown) macules and patches on sun exposed areas in a melasma-like pattern, that worsen after sun exposure.*

White-yellow-bluish WS were noticed in one patient with a very dark phototype and annular plaques on the dorsum of the hands .

The black hole pattern was described in the patient with dyschromic ALP of the hands, with dotted vessels on the white annular WS in a radial linear distribution (Figures 2-10) .

Histological confirmation reveals findings similar to those of classic LP with degeneration of the basal layer of the epidermis; a band-like lymphocytic infiltrate of the dermis obscuring the dermo-epidermal junction, with pigmentary incontinence, and follicular involvement in some cases .

Conclusions

There are many variants of lichen planus, the morphology and distribution differ largely depending on its clinical and histological subtype [5].

ALP is a rare variant of this disease with a seasonal occurrence, a predilection for dark-skinned females, an earlier age of onset; and a longer course [8].

In this study, we have found that this disease did not affect only children and young female adults as it was reported in the literature [5,6], it was also noticed in older patients; especially for the pigmented melasma-like subtype, this was also reported in a clinicopathological study of ALP and lichen planus pigmentosus, with a female to male ratio of 1.74, and a mean age of patients of 48.02 ± 14.83 [13], however; this study did not describe and focus on the different subtypes of ALP, and also dermoscopy was not reported.

The pigmented melasma-like subtype was the most predominant in our study, unlike data reported in the literature, that the most frequently presenting form is the AALP [6,14], this pigmented subtype was known to occur mostly in women [15], which joined our results. However, our patients with AALP were men with a very dark phototype.

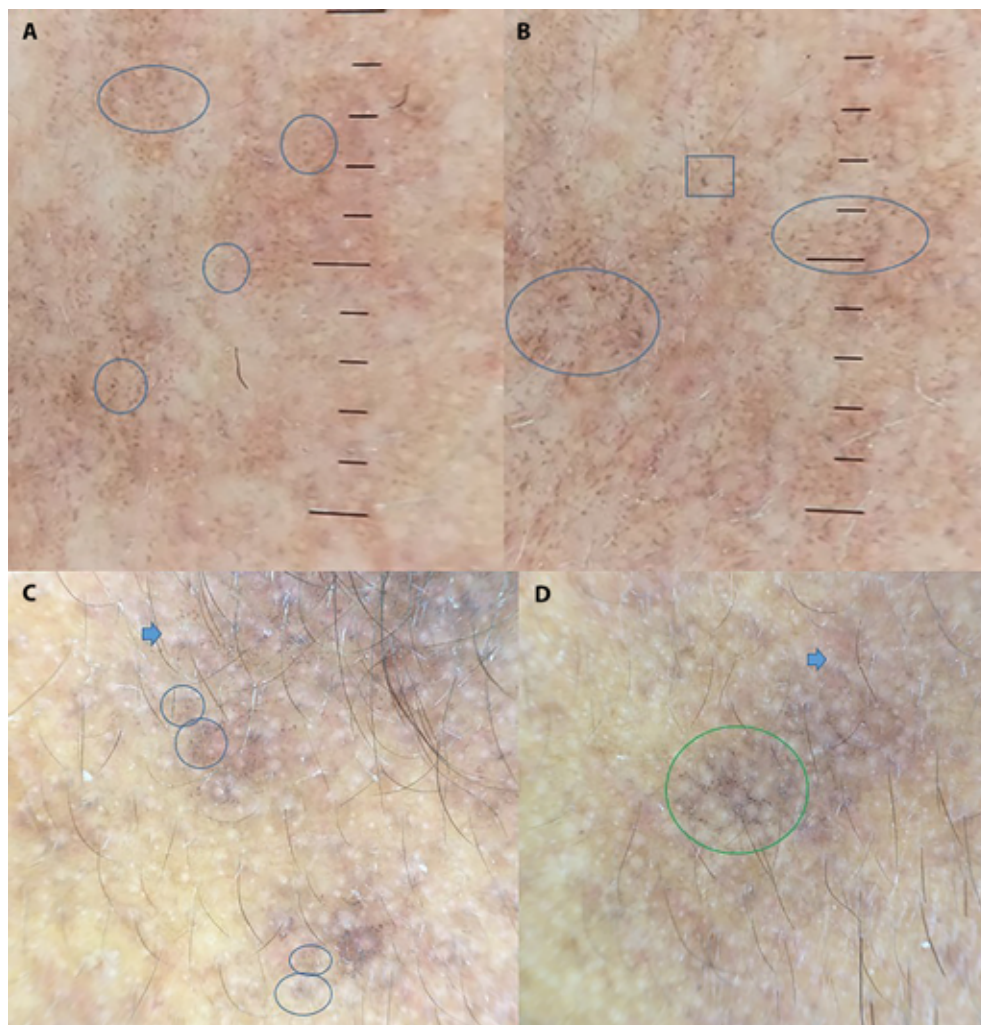


Figure 2. Dermoscopy of pigmented melasma-like Actinic Lichen Planus. Annular granular pattern (green circle) with reticular pigmentation, white linear and reticular Wickham striae (C and D, blue arrow), surrounded by pigmented areas and dots. Dots inside circles (blue circle) and eccentric pigmentation on circles (blue rectangle) in some areas.

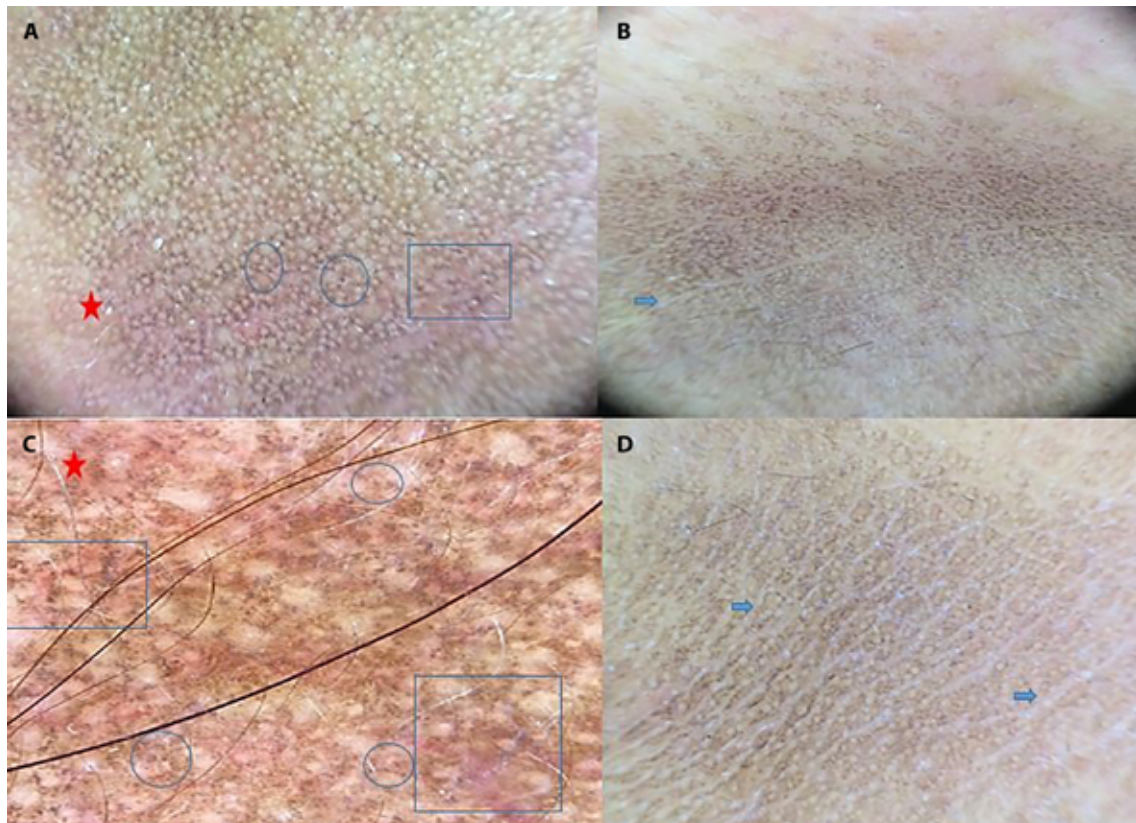


Figure 3. Dermoscopy of pigmented melasma-like Actinic Lichen Planus. Annular granular pattern with reticular pigmentation, hypopigmentation lacking skin creases (blue arrow), surrounded by brow-gray dots. Dots inside circles (blue circle) and an eccentric pigmentation on circles (blue rectangle), with an erythematous background (red star).



Figure 4: Annular Actinic Lichen Planus. Pigmented annular plaques on the forehead and the dorsum of the hands in two dark-skinned patients.

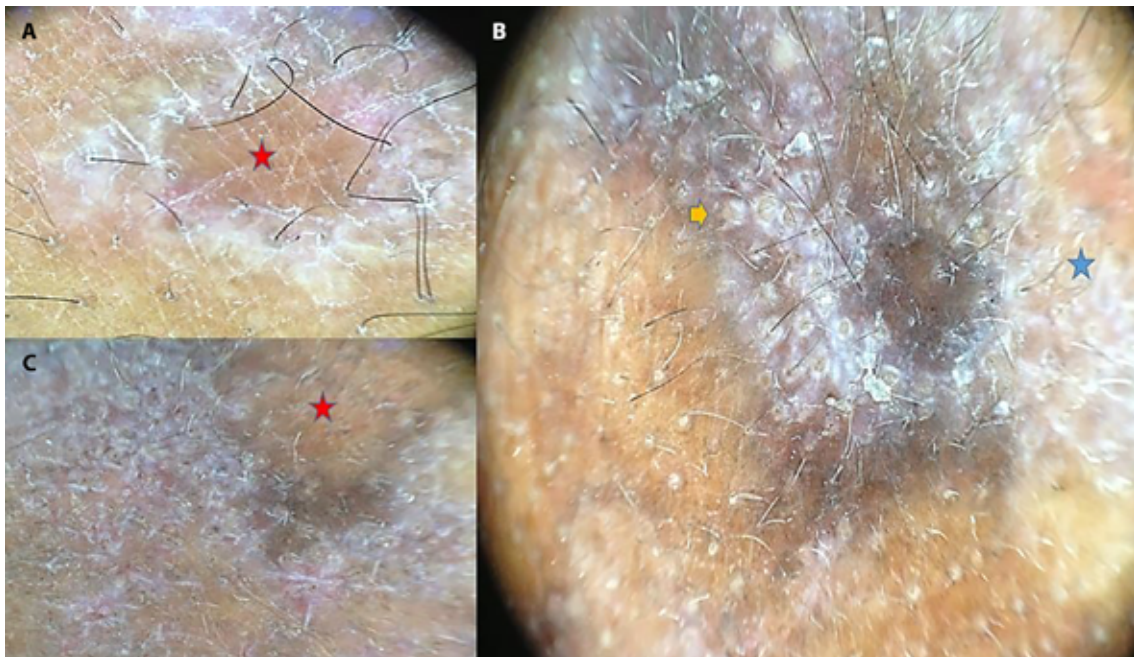


Figure 5. Dermoscopy of Annular Actinic Lichen Planus of the forehead. Reticular Wickham striae (blue star), and white halo around follicular openings with follicular plugs (yellow arrow) on the periphery of the plaque and pigmented structureless area at the center (red star).

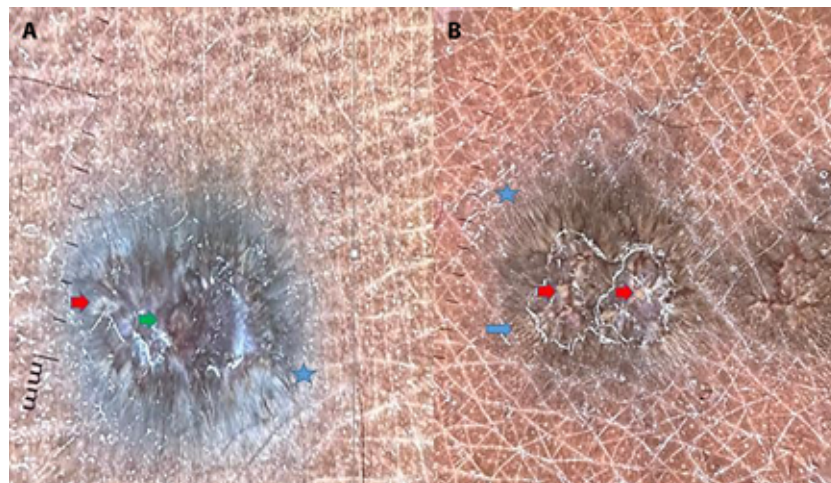


Figure 6. Dermoscopy of Annular Actinic Lichen Planus on the dorsum of the hands. Central depressed pigmented area with white halo at the center (green arrow). White-yellow-bluish Wickham striae (red arrow) with circumferential radial lines at the periphery of the plaques (blue star), and pigmented dots arranged in parallel lines (blue arrow).

In various subtypes of LP, WS have been reported to be structured white areas that correlate with an increase in the granular cell layer in the epidermis, or a focal increase in the epidermal activity and irregular acanthosis leading to striae formation. Blood vessels were especially noticed -in fair phototype- around WS with a lack of dermal vessels in the striae area [9], due to epidermal proliferation that decreases their visualization [16]. However in pigmented forms of LP,

especially macular lesions, and in very dark phototypes, WS can be difficult to see, can have various forms, or can be unapparent. Hypopigmentation lacking skin creases surrounded by pigmented dots and areas was a frequent finding in the pigmented melasma-like subtype in our study. Annular configuration of ALP was particularly reported [12,17], with a white-bluish coloration of WS [17], which was also noticed in our study in AALP and plaque-like ALP. Pigmented dots

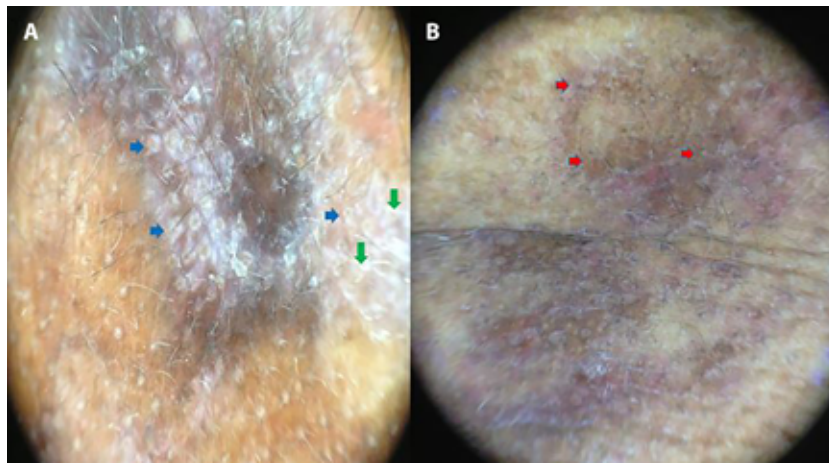


Figure 7. Annular Actinic Lichen Planus (A) Before treatment: white halo around follicular openings (blue arrow); and Wickham striae (green arrow). (B) After treatment: disappearance of these dermoscopic signs, with persistence of pigmented structures (pigmented areas, and dots) (red arrow).



Figure 8. Plaque-like Actinic Lichen Planus. (A) Confluent brown-gray plaques on the forehead with a depressed brownish center in some spots (8). (B) Dyschromic Actinic Lichen Planus. Pinhead-sized, whitish confluent papules, with a small horny plug in the center, on the dorsum of the hands.

arranged in parallel lines, and circumferential radial lines at the periphery of the lesions were new dermoscopic signs described in these patients.

In the active stage of LP, many dermoscopic findings could be found, mainly WS surrounded by dotted or lineal vessels enhancing their visualization, and erythema. In dark skin, WS are the main structures described in active lesions with an absence of vascular structures [17], except for the dyschromic ALP, as we reported in our study, where we

can find dotted vessels in a linear and a radial distribution on annular WS. Erythema could be noticed especially in phototype IV, and may correlate with the presence of symptoms, like pruritus as we noticed in three of our patients with ALP.

On the other hand, in the resolution phase, WS are absent, with fine or coarse gray-blue, brown or brown-black dots on a brown background [5,16]. WS are therefore a good marker of therapeutic efficiency that disappears with

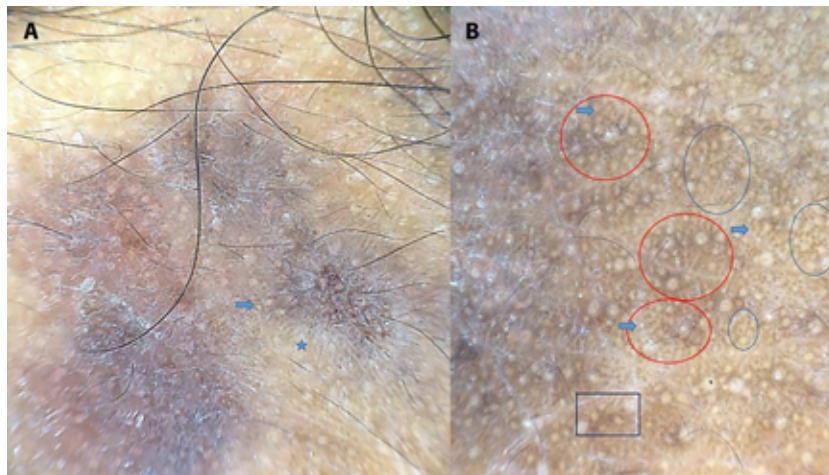


Figure 9. Plaque-like Actinic Lichen Planus dermoscopy: follicular white halo (red circle) surrounded by a pigmented rim, and pigmented dots arranged in parallel lines (blue arrow). In less elevated areas, we notice dots inside circles (blue circle), eccentric pigmentation on circles (blue rectangle), and circumferential radial lines at the periphery of the plaques (blue star).



Figure 10. Dyschromic Actinic Lichen Planus on the dorsum of the hands. Black hole pattern (blue circle) with annular Wickham striae and brown-grayish globules in the center. Central follicular plugs in some of the lesions (blue arrow), and dotted vessels with a radial linear distribution on the Wickham striae (red arrow).

treatment. Pigmented structures could however resist treatment, which was also noticed in our ALP patients (Figure 7).

Dermoscopic particularities of ALP were not fully described and investigated, only three publications [1,5] exist in the literature (Table 1). One concerned the annular variant of ALP, another reported a case of macular ALP that was misdiagnosed as lentigo maligna, due to the overlapping dermoscopic patterns found in the two diagnoses, especially the melasma-like ALP, such as diffuse peppering, hyperpigmented follicular openings, signet ring-like sign, and circles with central black dots [1], and an interesting study of non-neoplastic dermatoses in skin of colour by the

International Dermoscopy Society reported dermoscopy of the pigmented form of lichen actinicus with the main dermoscopic feature as periosteal brown dots and brown structureless areas with ostial sparing [10].

This descriptive study of dermoscopic patterns of various subtypes of ALP highlighted new dermoscopic descriptions that vary according to the clinical variant or the morphology, lesions distribution, and the phototype. Also, some epidemiological differences were noticed in comparison with the previous publications, concerning the older age of onset in melasma-like pigmented ALP, and the male predominance in annular ALP. Other prospective studies with a large number

Table 1. Dermatoscopic differences between Actinic Lichen Planus and classic Lichen Planus with a dermoscopy pathology correlation

Dermoscopic signs	Classic lichen planus	Actinic lichen planus	Dermatopathologic correlations of dermatoscopic findings
Wickham striae (18) • Dark phototype (19,20)	Polymorphic pearly white structures (rounded, arboriform, reticular, annular), Blue-white	White circular and reticular White-yellow-bluish WS	Hypergranulosis with acanthosis
Pigmented structures	Active lesions	Active ad late lesions	
Annular granular pattern	Not described	Pigmented melasma-like ALP	Melanin incontinence
Dots inside circles	Not described	Pigmented melasma-like ALP	
Eccentric pigmentation on circles	Not described	Pigmented melasma-like ALP	
Blue-gray granules	Yes	Pigmented melasma-like ALP	
Periosteal brown dots and brown structureless areas with ostial sparing (10)	Not described	Pigmented ALP	
Hypopigmentation lacking skin creases	Not described	Pigmented melasma-like ALP	Irregular acanthosis. and hypergranulosis
Perifollicular white halos	Not described	AALP and plaque-like ALP	Early perifollicular fibrosis
Follicular plugs	Hypertrophic forms of LP	AALP and plaque-like ALP	Follicular hyperkeratosis
White scales	Yes, may be diffuse obscuring the visibility of shiny white structures and Wickham striae	Fine scales	Orthokeratosis
Shiny white structures (19)	Reticular lines, and structureless areas	Reticular lines and perifollicular in AALP and plaque-like ALP	Dermal fibrosis
Circumferential radial lines at the periphery	Not described	AALP and plaque-like ALP	Peripheral extension of the basal vacuolization, the dermal inflammatory infiltrate and the pigmentary incontinence
Pigmented dots arranged in parallel lines	Not described	AALP and plaque-like ALP	Melanin incontinence
Vascular structures	Radial capillaries with dotted, globular and/or linear vessels, mainly localized at the periphery of the lesion (and less commonly showing a perifollicular or a diffuse pattern) (21)	Dotted vessels in Dyschromic ALP	Dermal vessels
Background	Pink violet, reddish and blue-gray, brown or yellow background	Light to dark brown violaceous blue-gray background	

ALP = Actinic Lichen Planus; AALP = annular Actinic Lichen Planus; LP = Lichen Planus.

of patients are warranted in order to fill the gap in the literature concerning dermoscopy of ALP and other variants of LP especially in dark phototype.

References

1. Venturini M, Manganoni AM, Zanca A, et al. Pigmented actinic lichen planus (PALP) mimicking lentigo maligna melanoma: Usefulness of in vivo reflectance confocal microscopy in diagnosis and follow-up. *JAAD Case Rep.* 2018;4(6):568-572. DOI: 10.1016/j.jdc.2018.02.008. PMID: 29998176. PMCID: PMC6038262.
2. Ilsaacson D, Turner ML, Elgart ML. Summertime actinic lichenoid eruption (lichen planus actinicus). *J Am Acad Dermatol.* 1981;4(4):404-411. DOI: 10.1016/s0190-9622(81)70038-0. PMID: 7229145.
3. van der Schroeff JG, Schothorst AA, Kanaar P. Induction of actinic lichen planus with artificial UV sources. *Arch Dermatol.* 1983;119(6):498-500. DOI: 10.1001/archderm.119.6.498. PMID: 6859890.
4. Salman SM, Khalouf R, Zaynoun S. Actinic lichen planus mimicking melasma. A clinical and histopathologic study of three cases. *J Am Acad Dermatol.* 1988;18(2 Pt 1):275-278. DOI: 10.1016/s0190-9622(88)70039-0. PMID: 3346411.
5. Singh R, Jawade S, Madke B. Actinic Lichen Planus: Significance of Dermoscopic Assessment. *Cureus.* 2023;15(3):e35716. DOI: 10.7759/cureus.35716. PMID: 37025742. PMCID: PMC10072168.
6. Jansen T, Gambichler T, von Kobyletzki L, Altmeyer P. Lichen planus actinicus treated with acitretin and topical corticosteroids. *J Eur Acad Dermatol Venereol.* 2002;16(2):174-175. DOI: 10.1046/j.1468-3083.2002.00392_3.x. PMID: 12046829.
7. Weston G, Payette M. Update on lichen planus and its clinical variants. *Int J Womens Dermatol.* 2015;1(3):140-149. DOI: 10.1016/j.ijwd.2015.04.001. PMID: 28491978. PMCID: PMC5418875.
8. Meads SB, Kunishige J, Ramos-Caro FA, Hassanein AM. Lichen planus actinicus. *Cutis.* 2003;72(5):377-381. PMID: 14655778.
9. Sachdeva S, Sachdeva S, Kapoor P. Wickham striae: etiopathogenesis and clinical significance. *Indian J Dermatol.* 2011;56(4):442-443. DOI: 10.4103/0019-5154.84739. PMID: 21965861. PMCID: PMC3179016.
10. Errichetti E, Ankad BS, Sonthalia S, et al. Dermoscopy in general dermatology (non-neoplastic dermatoses) of skin of colour: a comparative retrospective study by the International Dermoscopy Society. *Eur J Dermatol.* 2020;30(6):688-698. DOI: 10.1684/ejd.2020.3928. PMID: 33319764.
11. Cengiz FP, Cengiz AB, Emiroglu N, Comert E, Wellenhof RH. Dermoscopic and clinical features of head and neck melanoma. *An Bras Dermatol.* 2015;90(4):488-493. DOI: 10.1590/abd1806-4841.20153341. PMID: 26375217. PMCID: PMC4560537.
12. Kelati A, Rimani M, Chiheb S. Dermoscopy of Annular Atrophic Lichen Planus on a Dark Phototype: A Case Series. *Dermatol Pract Concept.* 2023;13(1):e2023024. DOI: 10.5826/dpc.1301a24. PMID: 36892367. PMCID: PMC9946049.
13. Kamyab K, Gholi Z, Ghiasi M, Pirzadeh M, Nasimi M. Clinicopathological Study of 307 Patients with Lichen Planus Actinicus and Pigmentosus Referred to Razi Skin Hospital From 2016 to 2021. *Dermatol Pract Concept.* 2023;13(2):e2023119. DOI: 10.5826/dpc.1302a119. PMID: 37196290. PMCID: PMC10188149.
14. Denguezli M, Nouria R, Jomaa B. Le lichen plan actinique. Etude anatomo-clinique de dix observations tunisiennes [Actinic lichen planus. An anatomoclinical study of 10 Tunisian cases]. *Ann Dermatol Venereol.* 1994;121(8):543-546. PMID: 7755310.
15. Aloï F, Solaroli C, Giovannini E. Actinic lichen planus simulating melasma. *Dermatology.* 1997;195(1):69-70. DOI: 10.1159/000245692. PMID: 9267745.
16. MMakhecha M, Singh T, Malladi N, Rambhia K. Dermoscopic features of various stages of lichen planus. *Indian J Dermatol Venereol Leprol.* 2020;86(2):191-194. DOI: 10.4103/ijdv.IJ-DVL_931_18. PMID: 32056976.
17. García-García B, Munguía-Calzada P, Aubán-Pariente J, Argenziano G, Vázquez-López F. Dermoscopy of lichen planus: Vascular and Wickham striae variations in the skin of colour. *Australas J Dermatol.* 2019;60(4):301-304. DOI: 10.1111/ajd.13052. PMID: 30982948.
18. Dash S, Behera B, Palit A, Sethy M, Nayak AK, Ayyanar P. Dermoscopy of lichen planus under polarized vs. nonpolarized mode: a retrospective analysis of 14 patients. *Clin Exp Dermatol.* 2021;46(4):752-756. DOI: 10.1111/ced.14565. PMID: 33484573.
19. Cook LC, Hanna C, Foulke GT, Seiverling EV. Dermoscopy in the Diagnosis of Inflammatory Dermatoses: Systematic Review Findings Reported for Psoriasis, Lupus, and Lichen Planus. *J Clin Aesthet Dermatol.* 2018;11(4):41-42. PMID: 29657671. PMCID: PMC5891086.
20. Errichetti E, Stinco G. Dermoscopy in General Dermatology: A Practical Overview. *Dermatol Ther (Heidelb).* 2016;6(4):471-507. DOI: 10.1007/s13555-016-0141-6. PMID: 27613297. PMCID: PMC5120630.