

Dermoscopic patterns in active and regressive lichen planus

Aisha Ghias, Atiya Arshad, Madiha Sanai, Aneela Asghar, Saelah Batool*, Zunaira Arshad, Tahir Jameel Ahmad

Department of Dermatology, KEMU/ Mayo Hospital, Lahore.

* Department of Dermatology, SIMS/ Services Hospital, Lahore.

Abstract *Objective* To determine various dermoscopic patterns in active and regressive Lichen Planus.

Methods It was an observational study carried out at department of dermatology unit-II, Mayo Hospital Lahore. A total of 70 dermoscopic images from 35 patients (20 females, 15 males) were studied. Their clinical pictures were taken with iPhone 6 and patients diagnosed both clinically and histologically of lichen planus were enrolled in the study. Dermoscopic pictures were taken at the same time with fireflypro DE 350 model, a polarized dermoscopic device, using both optical and digital magnification. Clinical and dermoscopic data of both active and regressive Lichen Planus was compiled separately. Predominant patterns were described keeping in mind the internationally accepted terminology & criteria.

Results 40 out of 70 images belonged to patients with clinically active LP, while 30 images showed features of regressive LP. Predominant features in active LP included wickhams stria (WS), vascular structures and various forms of pigmentation. WS and vascular structures are absent in majority of treated or regressive cases.

Conclusion Dermoscopy is a reliable non-invasive tool in differentiating active from regressive LP.

Key words

Dermoscopy, lichen planus, active, regressive.

Introduction

Dermoscopy is a relatively new diagnostic tool used worldwide for the detailed assessment and diagnosis of many dermatological problems. Not only does it help to establish a correct diagnosis but also one can monitor the disease activity as the patterns differ in active and regressing cases.

Dermoscopy is basically a combination of magnification, illumination and depth. In white races, its efficacy and superiority in diagnosis of

suspicious lesions has already been established but in “skin of colour” a lot is yet to be seen. There are two basic types of dermoscopic devices, polarized and non-polarized. Non-polarized or contact dermoscopes are traditional, first in use, instruments that are typically helpful in viewing the superficial parts of skin and therefore emphasize the pathological changes in epidermis. Polarized devices look more deeply into the skin and clearly identify the vascular structures in lesions but at the same time they are blind to top 0.06mm of skin and therefore pathological features like orthokeratosis etc. are not clearly appreciated by them.¹

Some lesions in dermatology have pathology predominately in epidermis while others have it

Address for correspondence

Dr. Aisha Ghias,
Department of Dermatology,
KEMU/ Mayo Hospital, Lahore.
Email: draishaghias@gmail.com

in dermis, yet others at both. So it would be rather imperative to have both types of scopes at hand to look at all the changes. Now-a days modern scopes have a side button through which you can toggle between the polarized and the non-polarized modes at the same time.

Because of the complexity involved, dermoscopy is reserved for experienced clinicians, dermatologists and plastic surgeons.

Dermoscopic convenience of diagnosis is enjoyable not only in the melanocytic lesions where you have the luxury to label lesions as benign or concerning but its scope is also spanning the inflammatory and other non-pigmented dermatological lesions e.g. LP, DLE, alopecias, dermatofibroma etc.

Lichen planus, the most typical of lichenoid dermatosis, is an idiopathic inflammatory skin disease often involving mucosal areas and has a relapsing and remitting chronic course. It is affecting approximately 0.5% of the population worldwide. It is thought to be a T-cell mediated autoimmune disease targeting the basal keratinocytes of epidermis and can be triggered by variety of stimuli e. g viruses, drugs and contact allergens. The classical clinical presentation usually is polygonal papules 1-3mm diameter ranging in colour from brown to erythematous to violet and the usual areas affected are volar aspects of wrists, around the ankles and lumbar region.²

There are various morphological types. Lichen planus is also widely studied by dermoscopy and its various variants show different patterns both in active as well as regressing phases.

This study is an effort to look at these dermoscopic features in our skin type.

Methods

This observational study was carried out in Department of Dermatology, King Edward Medical University/ Mayo Hospital Lahore, both on indoor and outpatients, from November 2018 to May 2019. The purpose and procedure of the study was explained to every patient in easy understandable language and those who consented to be enrolled were included.

Patients were enrolled by purposive sampling. Detailed history and examination were undertaken and patients were diagnosed clinically as lichen planus if they had small polygonal, discrete, violaceous papules. Histopathological confirmation of disease was carried out in doubtful cases. Various disease parameters like duration, areas involved, mucosal involvement and ongoing treatment were noted. Patients suffering from any concomitant dermatological illness were excluded.

Patients were diagnosed as having acute disease if their lesions had appeared in last 6 weeks and may also be increasing and they were under no treatment, however those whose disease was present for more than 6 weeks and either static or progressing were categorized as having chronic disease. In both acute and chronic cases, patients with no treatment were taken as suffering from active LP and patients who had received at least 06 weeks of treatment and the lesions had started regressing clinically were taken as suffering from regressive LP. Demographic data (age and gender) and other variables were noted on a specially designed proforma. In each patient, clinical pictures were taken with iPhone 6 and dermoscopic pictures were taken at the same time with fireflypro DE 350 model, a polarized dermoscopic device, using both optical and digital magnification. The clinical and dermoscopic data of each patient were saved together in soft copy in computer programme. Dermoscopic images were studied

Table 1

	<i>Classical LP (CLP)²⁸ n(%)</i>	<i>Acute Generalized LP (AGLP)⁷ n(%)</i>	<i>Annular LP (ALP)² n(%)</i>	<i>Zosteriform LP (ZLP)³ n(%)</i>	<i>Regressive LP (RLP)³⁰ n(%)</i>
Wickham stria (WS)	22(78.5)	4(57)	1(50)	3(100)	–
<i>Morphology</i>					
Reticular	15(53.5)	4(57)	1(50)	2(66.6)	
Radial streaming	3(10.7)	–	–	–	
Linear	3(10.7)	–	–	1(33.3)	
Blue-white veil	1(3.5)	–	–	–	
<i>Colour</i>					
White	12(42.8)	2(28.5)	1(50)	1(33.3)	
Brown	3(10.7)	1(14.2)	1(50)	–	
Blue-like	1(3.5)	–	–	–	
<i>Pigment patterns</i>					
Dark brown dots & globules	22(78.5)	5(71.4)	–	2(66.6)	20(66.6)
Diffuse background pig.	5(17.8)	1(14.2)	1(50)	1(33.3)	8(26.6)
-Ve pig.	1(3.5)	–	–	–	2(6.6)
<i>Vascular patterns</i>					
Red dots	11(39.2)	5(71.4)	2(100)	2(66.6)	
Linear vessels	8(28.5)	1(14)	–	1(33.3)	
Diffuse erythema	2(7)	–	–	–	
-Ve	7(25)	1(14)	–	–	30(100)

and labelled by qualified dermoscope specialist and data analyzed in both active and regressive cases of lichen planus.

Results

There were 35 patients and 70 images were studied from them. A total of 20 females and 15 males took part in the study. Mean age of the patients was 25±64 years with a range of 19 to 55 years. A total of 40 images from 20 patients were of active LP (28 classical LP, 7 acute generalized LP, 2 annular LP, 3 zosteriform LP)



Figure 1 Lateral side of foot of a patient with clinically active LP.

while 30 images studied from 15 patients were of regressive LP. Dermoscopy in patients with clinically active and regressive LP recognizes various features that are tabulated **Table 1**.

Same patients may have similar or different morphological types of lesions of LP in body with similar dermoscopic pictures and some similar clinical images had different dermoscopic details. Following are the key features seen on dermoscopy in active lichen planus.

1. Wickham's stria (different morphology and colour).
2. Vascular structures (different morphologies and location).
3. Pigment (location and color).
4. Background color.

Wickhams stria (WS)

Predominantly seen in active LP, WS correspond to the hypergranulosis going on. However their absence does not rule out lichen planus. Various morphological types of Wickham's stria were seen in this study.

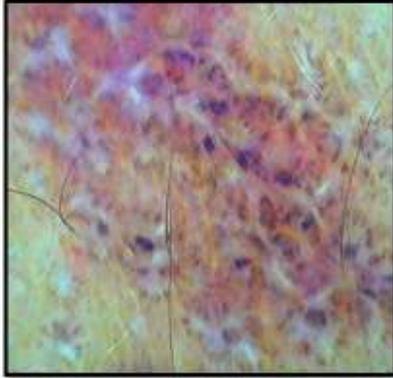


Figure 2 clinical and dermoscopic picture of active LP in a child; white reticular stria with surrounding vasculature and pigment globules.

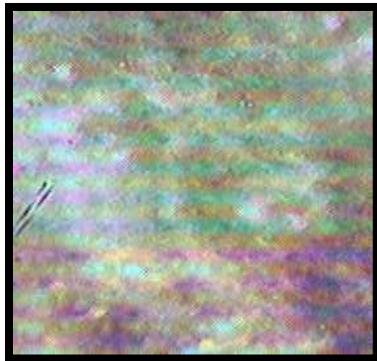


Figure 3 Yellow and linear wickham stria with hues of vessels and deep dermal pigmentation.

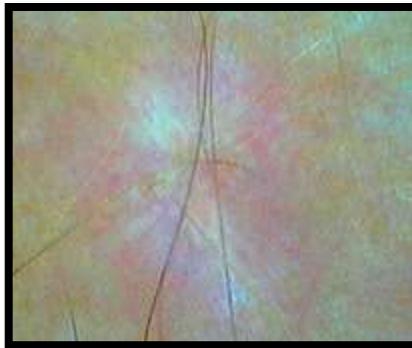


Figure 4 Radial streaming WS surrounded by vasculature.

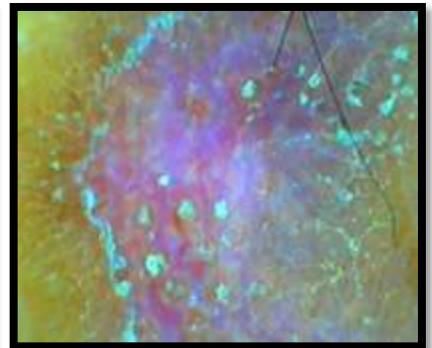


Figure 5 White-blue veil like WS with linear and dot like vessels.

Vascular structures

Although clinically and histopathologically lesions of active lichen planus don't show prominent vessels but finding vascular structures on dermoscopy of lichen planus is a key feature

to see especially in active progressive cases. These are usually seen as red dots and linear structures. Sometimes the vessels are seen as comma shaped structures or diffuse erythema



Figure 6 Prominent diffuse erythema seen around WSL.

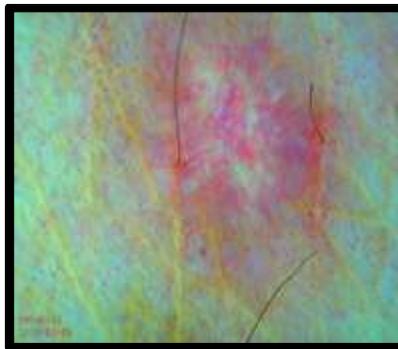


Figure 7 Linear and dot-like vascular structures in association with yellow WS.

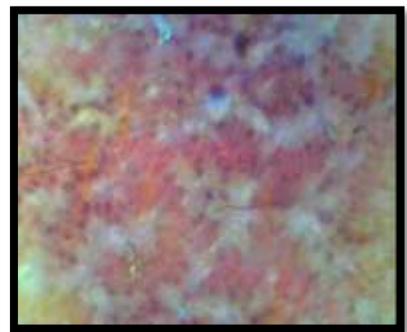


Figure 8 Linear vascular structures perpendicular to direction of WS and almost surrounding it, some dot-like vessels also seen at periphery.

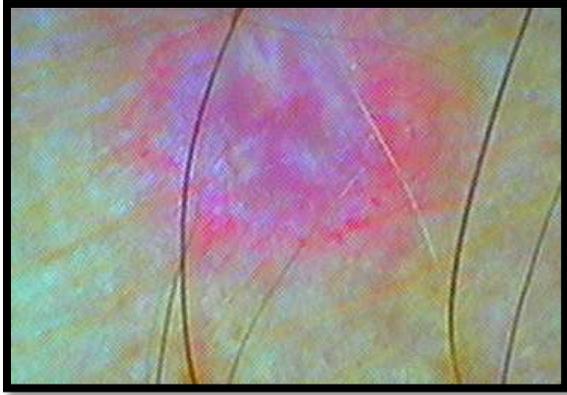


Figure 9 Circular halo of vascular structures all around the lesion.

Pigment

The colour of pigment seen in LP depends on the disease activity, its location and skin colour of the patient. The more deep a pigment seen the more blue it appears. So starting from top we may see light to dark brown to grey to blue pigmentation. Also the morphology varies. It may be seen as dot like structures discrete and well defined representing pigment containing macrophages. Else it may appear as diffuse background brown pigmentation suggesting pigment incontinence in dermis. Following different pigment were seen in our patients of active LP:

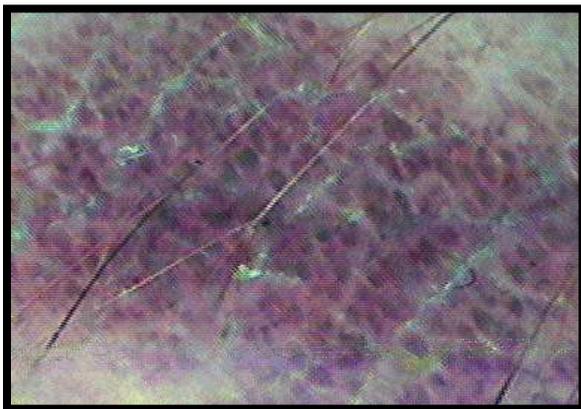


Figure 10 Cobblestone pigment pattern in a case of regressive LP.

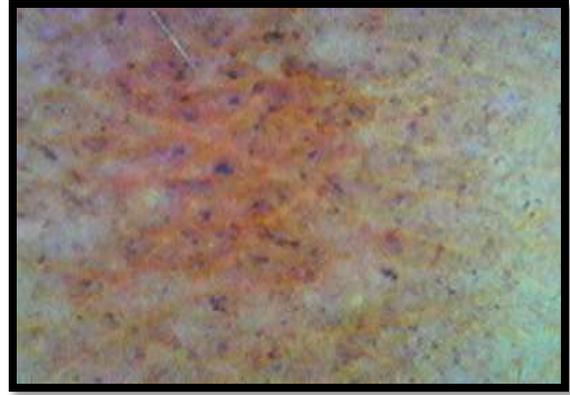


Figure 11 Homogenous dark brown background pigmentation with dermal nests of melanophages containing pigment seen as blue clods.

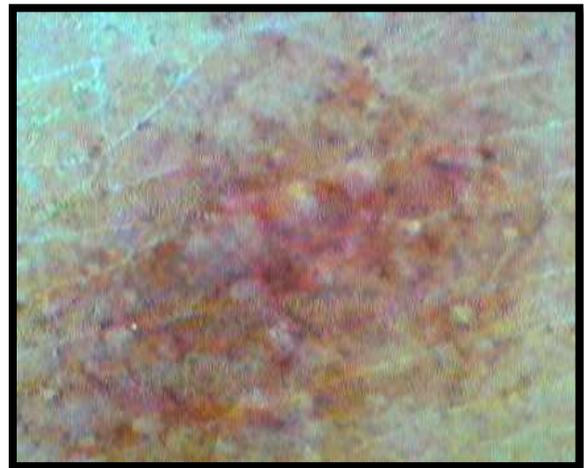


Figure 12 Colour ranges from light brown to dark brown to grey to blue showing melanin at various levels.

Background pigment variation is seen both in active and regressive lichen planus and doesn't usually vary with treatment.

Dermoscopy in regressive LP

WS disappear after treatment of LP so we can use it as an activation marker in LP. Same goes true for the vascular structures as they tend to fade or disappear after treatment.

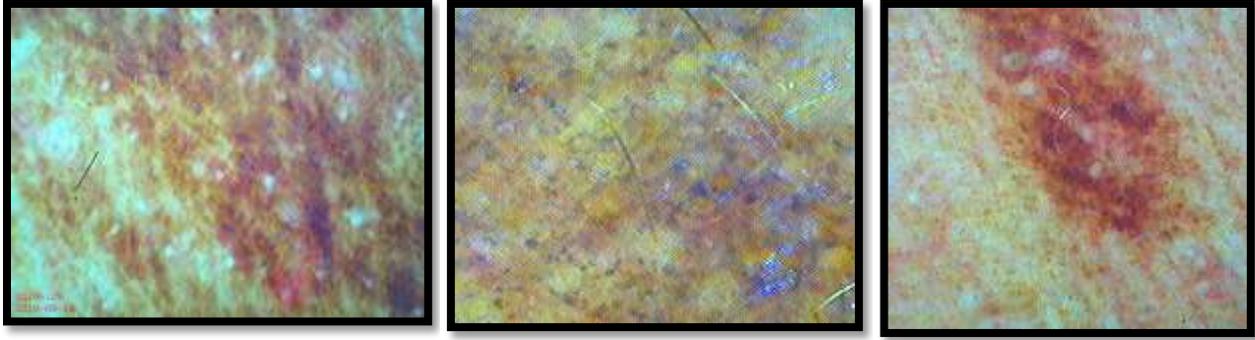


Figure 13 Deep dot-like pigmentation in LP lesions persists even after treatment. It represents the dermal melanophages carrying the pigment

Figure 14,15 complete/ near complete absence of WS with persistent pigment. Prominent reduction in vessels

Discussion

Lichen planus is a cell mediated immune response of largely unknown etiology, however almost 16% cases have been found associated with hepatitis C virus infection. Other associated diseases include alopecia areata, vitiligo, dermatomyositis, morphea, lichen sclerosis, myesthenia gravis.³⁻⁵

Lichen planus may involve skin and mucous membranes. Cutaneous presentation includes flexural pruritic papular eruption usually generalizing in 2-16 weeks. Spontaneous resolution is seen in around 50 % cases in 6 months and 85% cases in 18 months. Chronicity is usually linked with large, annular, hypertrophic lesions and mucosal involvement.⁶

It can be diagnosed clinically in classic cases however in atypical presentations, a 4mm punch biopsy serves the purpose. The histology is usually characteristic but it needs human resource and equipment, furthermore some patients or the sites are not fit for biopsy and of course it is not an instant help.

Short of biopsy, we have a non-invasive tool now that can help diagnose lichen planus and differentiate its active and regressive forms by its typical features.

Dermoscopy is a valuable tool in early diagnosis of lichen planus and key features of active lichen planus include Wickham stria (WS), vascular structures especially red dots, radial capillaries and hyperpigmentation which could be brownish diffuse or deeper dotted patterns. WS are considered pathognomonic for Lichen Planus. However, their absence does not exclude the diagnosis. WS are usually missing especially in treated LP or in particular forms of LP (LP pigmentosus, actinic LP). The value of dermoscopy also lies in evaluation of treatment outcome as vascular structures and WS tend to disappear with appropriate treatment. However, deep dotted pigmentation corresponds to the presence of pigment in dermal melanophages and is typically resistant to treatment.^{6,7}

Lichen planus pigmentosus has been studied well in India and although it does not offer any clear differentiation points in favor of active or regressive LP, yet in skin of colour it is imperative to know various features of LP in various morphological forms.⁸

There are multiple studies that have concluded that not only does dermoscopy help in diagnosing cases of lichen planus earlier but also we can isolate active and regressive cases of LP and tailor our treatment plan accordingly. Studies from Greece and turkey also confirmed

it. Moreover, we can explain the prognosis in a better way by doing dermoscopy.^{9,10}

References

1. Ashfaq. A Marghoob, Natalia jaimes. Overview of dermoscopy [accessed online Oct 15, 2019] available from URL: <https://www.uptodate.com/contents/overview-of-dermoscopy>.
2. Piguet v, Beathnach S.M, Cleach L. Lichen planus and Lichenoid disorders. In: chalmers R, barker J, Griffith C, bleaker T, creamer D. editors. Rook's text book of dermatology. John wiley & sons Ltd; 2016.37.1.
3. Raslan HM, Ezzat WM, Abd El Hamid MF *et al*. Skin manifestations of chronic hepatitis C virus infection in Cairo, Egypt. *East Mediterr Health J*. 2009; **15(3)**:692-700.
4. Alaizari NA, Al-Maweri SA, Al-Shamiri HM *et al*. Hepatitis C virus infections in oral lichen planus: a systematic review and meta-analysis. *Aust Dent J*. 2016; **61(3)**:282-7.
5. Bigby M. The relationship between lichen planus and hepatitis C clarified. *Arch Dermatol*. 2009; **145(9)**:1048-50.
6. Gungor S, Topal I.O.and Goncu E.K. Dermoscopic patterns in active and regressive lichen planus and lichen planus variants: a morphological study. *Dermatol Pract Concept*. 2015; **5(2)**: 45–53.
7. Vásquez-López F, Gómez-Diez S, Sánchez J. Dermoscopy of active lichen planus. *Arch Dermatol*. 2007; **143(8)**:1092.
8. Sonthalia S, Errichetti E, Kaliyadan F *et al*. Dermoscopy of lichen planus pigmentosus in Indian patients – Pitfalls to avoid. *Indian J Dermatol Venereol Leprol*.2018;**84**:311-3.
9. Friedman P, Sabban EC, Marcucci C, Peralta R, Cabo H. Dermoscopic findings in different clinical variants of lichen planus. Is dermoscopy useful?. *Dermatol Pract Concept*. 2015; **5(4)**:51–5.
10. Lallas A, Kyrgidis A, Tzellos TG, *et al*. Accuracy of dermoscopic criteria for the diagnosis of psoriasis, dermatitis, lichen planus and pityriasis rosea. *Br J Dermatol*. 2012; **166**:1198–205.