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DERMOSCOPIC FEATURES OF LUPUS CHEILITIS IN DARK-SKINNED PHOTOTYPES: A CROSS-SECTIONAL STUDY OF 13 PATIENTS

Hyba Taounza [1,*], Yosra Ben Kraiem [1], Maha Habibi [1], S. Messaoud [2], I. Raouane [3], Laila Benzekri [1] and M. Meziane [1]

[1] Department of Dermatology, Mohammed V University of Rabat, Ibn Sina University Hospital, Rabat, Morocco.
[2] Laboratory of Epidemiology and Clinical Research, Faculty of Medicine and Pharmacy of Rabat, Morocco.
[3] Department of Internal Medicine, Mohammed V University of Rabat, Ibn Sina University Hospital, Rabat, Morocco.
* Corresponding Author

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ABSTRACT

Background: Cheilitis encompasses a heterogeneous group of inflammatory lip disorders that are often difficult to diagnose clinically, particularly in the absence of associated cutaneous lesions. Dermoscopy is a useful, non-invasive adjunct that can orient the underlying aetiology through specific criteria. Data on the dermoscopic features of lupus cheilitis remain scarce, especially in dark-skinned populations.

Objective: To identify the main dermoscopic characteristics of lupus cheilitis in patients with dark phototypes, in order to improve diagnostic orientation and limit unnecessary biopsies.

Methods: We conducted a descriptive and analytical, monocentric, cross-sectional study from January 2023 to April 2024, including patients with clinically and/or histologically confirmed lupus cheilitis. Dermoscopic images were acquired using a DermLite DL4 or DL5 device and independently analysed by two dermatologists.

Results: Thirteen patients were included. The mean age was 52.7 years, with a female predominance (61.5%). All patients had Fitzpatrick phototype IV, and lip involvement was bilateral in 100% of cases. Most patients lived in an urban area (69.2%). Hypertension and smoking were each found in 15.4% of patients, and diabetes in 7.7%. Chronic sun exposure was reported in 7.7% of patients, and lupus disease was clinically active in 84.6%. The main dermoscopic signs were a white-red background (64.3%), white scales with a central distribution (64.3% and 57.2%, respectively), polymorphous vascularization (71.4%) dominated by hairpin vessels (64.3%), and whitish radial lines (50%). Rosettes were present in 35.7% of cases and were the only feature statistically associated with lupus ($p = 0.013$).

Conclusion: Dermoscopy appears to be a valuable diagnostic aid in lupus cheilitis, particularly when cutaneous signs are absent. A white-red background, white scales, hairpin-predominant polymorphous vascularization and whitish radial lines were the most evocative features in our series, while rosettes constituted the main sign statistically associated with lupus, suggesting their potential value as a dermoscopic clue orienting the diagnosis.

Keywords: Dermoscopy; Lupus cheilitis; Discoid lupus erythematosus; Rosettes; Skin of color; Mucoscopy

1 INTRODUCTION

Cheilitis is a generic term that groups together a heterogeneous set of inflammatory disorders affecting the lips, including actinic cheilitis, lichen planus cheilitis, plasma cell cheilitis, granulomatous cheilitis, eczematous cheilitis and lupus cheilitis, among others. Its clinical diagnosis can be difficult, particularly in the absence of an associated cutaneous eruption that would otherwise orient the clinician toward a specific aetiology [1].

Lupus cheilitis is a mucosal expression of cutaneous lupus erythematosus, most often corresponding to the chronic discoid subtype, which may occur in isolation or in association with cutaneous and/or systemic lupus erythematosus. Oral and labial mucosal involvement is a recognised, although inconstant, manifestation of lupus erythematosus: its reported prevalence varies according to the clinical subtype, ranging from 8-45% in systemic lupus erythematosus, 3-20% in chronic cutaneous lupus erythematosus and 4-25% in discoid lupus erythematosus [2]. When isolated to the lip, lupus cheilitis can mimic other inflammatory, actinic or even neoplastic cheilitides, which exposes patients to diagnostic delay and, not infrequently, to lip biopsies that could be avoided with a better non-invasive diagnostic approach.

Dermoscopy (or mucoscopy, when applied to mucosal and semimucosal surfaces) has become an increasingly used, simple and non-invasive tool in general dermatology, allowing the identification of morphological structures that are not visible to the naked eye and that can orient the clinician toward a specific diagnosis [3]. In cutaneous lupus erythematosus, dermoscopy has proved useful for identifying disease activity and scarring, and several dermoscopic criteria - including follicular plugging, perifollicular whitish halos, arborising or hairpin vessels, whitish structureless areas and rosettes - have been described and validated in cross-sectional studies and systematic reviews [4,5]. In contrast, data specifically addressing the dermoscopic features of lupus cheilitis remain limited to a small number of series, most of which originate from South Asian tertiary referral centres and predominantly include patients with skin of color [6,7].

Furthermore, most classic dermoscopic descriptions of cutaneous and mucosal lupus erythematosus were established in populations with fair or intermediate phototypes, whereas pigmentary dermoscopic structures are known to differ substantially in darker phototypes, in whom pigment-related features (brown-grey dots, globules and structureless areas) are more prominent due to greater epidermal melanin content and more pronounced pigmentary incontinence [6,7]. Data on lupus cheilitis in populations with uniformly dark phototypes are, to our knowledge, particularly scarce.

The objective of our study was therefore to identify the main dermoscopic characteristics of lupus cheilitis in a population of dark-skinned patients (Fitzpatrick phototype IV), in order to improve diagnostic orientation and to limit the need for unnecessary lip biopsies.

2 MATERIAL AND METHODS

We conducted a descriptive and analytical, monocentric, cross-sectional study in the Department of Dermatology, Ibn Sina University Hospital, Mohammed V University of Rabat, Morocco, over a 16-month period from January 2023 to April 2024.

2.1 Study population

All patients presenting with lupus cheilitis, confirmed clinically and/or histologically, during the study period were included. Lupus cheilitis was defined as a labial lesion clinically compatible with discoid or chronic cutaneous lupus erythematosus, with or without histopathological confirmation on lip biopsy, occurring in a patient with a personal history of cutaneous and/or systemic lupus erythematosus or in whom the diagnosis was retained after clinico-pathological correlation. Patients with an alternative confirmed cause of cheilitis, or with dermoscopic images of insufficient quality for interpretation, were not retained for analysis.

2.2 Data collection

For each patient, we collected demographic data (age, sex, area of residence), Fitzpatrick phototype, cardiovascular and metabolic comorbidities (hypertension, diabetes mellitus), smoking status, history of chronic sun exposure, laterality of lip involvement, and clinical and/or biological activity of the underlying lupus disease.

2.3 Dermoscopic examination

Dermoscopic images of the labial lesions were obtained using a DermLite DL4 or DL5 dermatoscope (3Gen, San Juan Capistrano, CA, USA), used in both polarized and non-polarized, contact and non-contact modes as appropriate. Images were analysed independently by two dermatologists experienced in dermoscopy, using standardized dermoscopic terminology for inflammatory and mucosal dermatoses [3]. The dermoscopic criteria specifically assessed included

background colour (white-red/erythematous-whitish, purplish-white, ivory-white), the presence, colour and distribution of scales, the type and pattern of vascular structures (hairpin/looped, linear-irregular, arborising, glomerular vessels; monomorphous versus polymorphous vascularization), the presence of whitish radial lines, pigmented structures (dots, globules, structureless areas), and the presence of rosettes (four white points arranged in a clover-like pattern within a follicular opening, best visualised with polarized dermoscopy). Discordant readings were resolved by consensus.

2.4 Statistical analysis

Quantitative variables were expressed as means, and qualitative variables as frequencies and percentages. The association between individual dermoscopic features and the diagnosis of lupus was assessed using Fisher's exact test or the chi-squared test as appropriate; a p-value < 0.05 was considered statistically significant.

2.5 Ethical considerations

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. [AUTHOR: Insert verified ethics approval or the applicable exemption statement.] Written or oral informed consent was obtained from all participants prior to inclusion, including consent for the clinical and dermoscopic photographs used for analysis.

3 RESULTS

3.1 Demographic and clinical characteristics

Thirteen patients with lupus cheilitis were included over the study period. The mean age was 52.7 years, with a clear female predominance (61.5% of patients). All patients had Fitzpatrick phototype IV, and lip involvement was bilateral in 100% of cases. Most patients lived in an urban environment (69.2%). Regarding comorbidities, hypertension and active smoking were each found in 15.4% of patients, while diabetes mellitus was present in 7.7% of cases. A history of chronic sun exposure was reported by 7.7% of patients. The underlying lupus disease was clinically and/or biologically active in 84.6% of patients (Table 1).

Table 1: Demographic, clinical and comorbidity profile of the study population (n = 13).

Characteristic	Value (n = 13)
Mean age, years	52.7
Female sex, n (%)	8 (61.5)
Fitzpatrick phototype IV, n (%)	13 (100)
Bilateral lip involvement, n (%)	13 (100)
Urban residence, n (%)	9 (69.2)
Hypertension, n (%)	2 (15.4)
Active smoking, n (%)	2 (15.4)
Diabetes mellitus, n (%)	1 (7.7)
Reported chronic sun exposure, n (%)	1 (7.7)
Clinically/biologically active lupus, n (%)	11 (84.6)

3.2 Dermoscopic findings

The main dermoscopic signs identified on the labial lesions were a white-red (erythematous-whitish) background, present in 64.3% of cases, and white scales, also observed in 64.3% of cases, with a central distribution pattern noted in 57.2% (Figure 1). Vascular structures were polymorphous in 71.4% of cases, dominated by hairpin (looped) vessels, which were the predominant vascular pattern in 64.3% of cases. Whitish radial lines were observed in 50% of cases, and pigmented dots/globules were frequently noted along the vermilion border (Figure 2). Rosettes were present in 35.7% of cases and constituted the only dermoscopic feature statistically significantly associated with the diagnosis of lupus (p = 0.013) (Table 2).

Table 2: Main dermoscopic findings observed on the labial lesions of lupus cheilitis. NS: not statistically significant.

Dermoscopic feature	Frequency (%)	p-value (association with lupus)
White-red (erythematous-whitish) background	64.3	NS
White scales	64.3	NS
– with central distribution pattern	57.2	NS
Polymorphous vascularization	71.4	NS
– hairpin (looped) vessels (predominant pattern)	64.3	NS
Whitish radial lines	50.0	NS
Rosettes	35.7	0.013

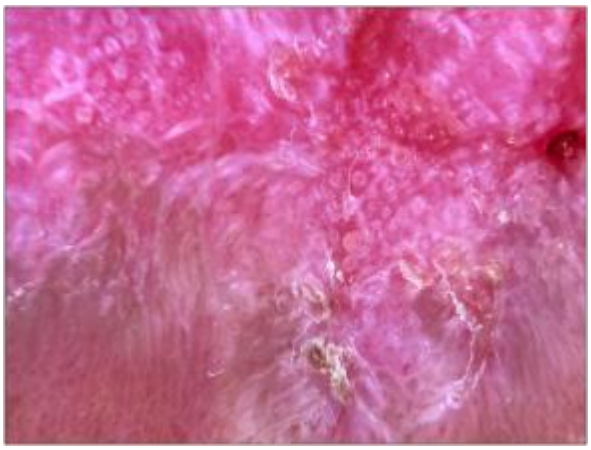

Figure 1: Dermoscopic view of the labial lesion showing a white-red background with a polymorphous vascular pattern and whitish scales.

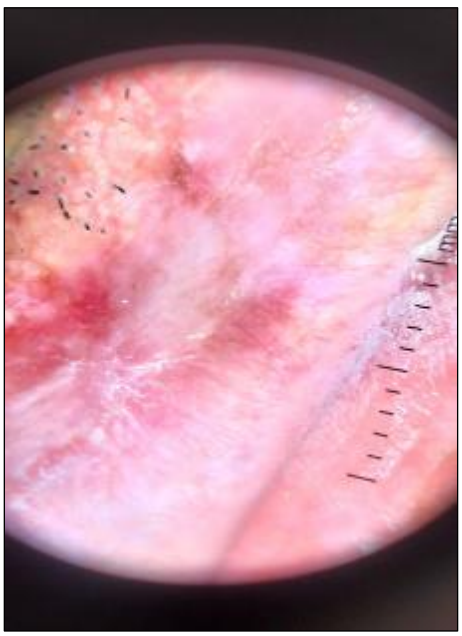

Figure 2: Dermoscopic view of the labial vermilion border showing whitish radial lines and brown-grey pigmented dots/globules (millimetric scale).

4 DISCUSSION

Our study suggests that dermoscopy is a useful diagnostic aid in lupus cheilitis, particularly in the frequent situation where no associated cutaneous lesion is present to orient the clinical diagnosis. In our series, a white-red background, white scales, polymorphous vascularization predominantly composed of hairpin vessels, and whitish radial lines were the most consistently observed and evocative dermoscopic features.

These findings are broadly concordant with those reported in the limited literature specifically dedicated to lupus cheilitis. Garg et al., in the largest published series to date (35 patients with chronic lupus erythematosus cheilitis from a tertiary care centre in East India), reported reddish-white structureless areas in 91.4% of cases, hairpin vessels in 74.2%, linear-irregular vessels in 65.7% and radial white lines in 77.1% [7]. Similarly, Behera et al., in a preliminary series of eight patients with discoid lupus cheilitis and skin of color, described an ivory-white or reddish-white background in 75% and 62.5% of cases respectively, linear vessels in 100% (hairpin-shaped in 87.5%), and white scales in 87.5% [6]. Although the frequencies vary between series - likely reflecting differences in sample size, disease duration and lesion selection - the combination of a whitish-erythematous background, hairpin-predominant polymorphous vascularization and whitish scales or radial lines appears to be a recurrent and characteristic dermoscopic signature of lupus cheilitis across populations.

The presence of frequent pigmented structures (brown-grey dots, globules and structureless pigmented areas) has also been consistently reported in series recruiting patients with skin of color, being observed in up to 100% of cases by Behera et al. and in 34.8-42.8% of cases (pigment dots/globules and pigment lines, respectively) by Garg et al. [6,7]. In our series, which included only patients with Fitzpatrick phototype IV, this could similarly explain the frequent pigmentary component of the dermoscopic picture, in keeping with the greater epidermal melanin content and the more pronounced post-inflammatory pigmentary incontinence described in darker phototypes [6,7].

Rosettes represented the principal dermoscopic sign statistically associated with lupus in our cohort ($p = 0.013$). This four-point, clover-like white structure, best visualised under polarized, non-contact dermoscopy, has previously been described as a dermoscopic clue in cutaneous discoid lupus erythematosus, notably by Ankad et al. [8], and has since been reported in up to 57.1% of cases in the cross-sectional series of Fathy et al. [4]. However, to our knowledge, rosettes had not previously been reported in the specific context of lupus cheilitis. Histologically, rosettes are thought to correspond to keratin-filled, dilated follicular infundibula, and are therefore not entirely specific to lupus erythematosus, having also been described in actinically damaged skin, scars and certain epithelial neoplasms. Nevertheless, the statistically significant association observed in our series, together with previous reports in cutaneous discoid lupus erythematosus, supports the potential value of rosettes as a novel and complementary dermoscopic clue orienting toward the diagnosis of lupus cheilitis, particularly when integrated with the other criteria described above rather than used in isolation.

This need for an integrated, multi-criteria interpretation is further supported by the multicentric retrospective study conducted by the International Dermoscopy Society, which compared the dermoscopic features of actinic cheilitis with those of other common inflammatory cheilitides, including discoid lupus erythematosus and lichen planus. That study found substantial overlap between entities and concluded that no single dermoscopic feature was pathognomonic for any specific cause of cheilitis [9]. This reinforces the notion that the diagnostic value of dermoscopy in lupus cheilitis lies less in any single isolated criterion than in the recognition of a characteristic combination of features - background colour, vascular pattern, scale characteristics, radial lines and rosettes - to be interpreted alongside the clinical presentation and, when necessary, histopathological confirmation.

Our study has several limitations, including its monocentric design, the relatively small sample size ($n = 13$), the inclusion of a population with a single, uniformly dark phototype (which limits the generalisability of our findings to lighter phototypes), and the absence of a comparison group of non-lupus cheilitis, which would have allowed formal assessment of the sensitivity and specificity of each dermoscopic criterion rather than solely its frequency and association with the diagnosis of lupus. Nonetheless, to our knowledge, this is among the first studies to specifically describe the dermoscopic features of lupus cheilitis in a population composed exclusively of dark-skinned patients, thereby contributing original data to a still scarce body of literature that has, until now, originated mainly from South Asian centres.

5 CONCLUSION

Our study suggests that dermoscopy constitutes a useful diagnostic aid in lupus cheilitis. In our series of dark-skinned patients, the combination of a white-red background, white scales, polymorphous vascularization dominated by hairpin vessels, and whitish radial lines constituted the most evocative dermoscopic pattern, while rosettes represented the principal sign statistically associated with lupus and could constitute a novel dermoscopic clue orienting the diagnosis.

Larger, multicentric studies are needed to identify potential additional specific signs and to evaluate their association with disease activity.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

Acknowledgments

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Disclosure of conflict of interest

The authors declare that they have no conflict of interest.

Statement of ethical approval

This study was conducted in accordance with the Declaration of Helsinki.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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