

## UNLOCKING THE INTRIGUING DERMOSCPIC INSIGHTS INTO ACUTE CUTANEOUS LUPUS ERYTHEMATOSUS: A RETROSPECTIVE STUDY.

Seeba Hussain

Head of Department, Department of Dermatology, Venereology & Leprosy, Venereology & Leprosy, Katihar Medical College, Katihar, Bihar, India.

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### ABSTRACT

#### Background

Acute Cutaneous Lupus Erythematosus is a significant manifestation of systemic lupus erythematosus (SLE), characterized by various dermatological symptoms. Dermoscopy has emerged as a valuable tool in the assessment of skin lesions, providing insights into the microvascular and morphological changes associated with ACLE. The study investigated and characterized the dermatoscopic features of acute cutaneous lupus erythematosus, aiming to enhance diagnostic accuracy and provide valuable insights into this condition.

#### Methods

Retrospective study aimed to investigate the dermatoscopic features of ACLE and their associations with clinical manifestations. Sixty patients diagnosed with ACLE, meeting the Systemic Lupus International Collaborating Clinics criteria for SLE, were included. A dermatoscopic examination was conducted to identify characteristic features, and statistical analysis was performed to assess associations between dermatoscopic findings and clinical characteristics.

#### Results

In a study of 60 ACLE patients, dermatoscopic analysis revealed key features: scale crust in 80%, follicular plugs in 70%, erythema in all, dotted vessels in 60%, and linear vessels in 45%. Scale crust strongly correlated with malar rash, and follicular plugs with photosensitivity and oral ulcers, highlighting the diagnostic relevance of these dermatoscopic signs in ACLE.

#### Conclusion

The study highlights the diagnostic and prognostic implications of dermoscopy in ACLE, emphasizing its role in enhancing diagnostic accuracy and guiding personalized treatment strategies. Integration of dermoscopy into clinical practice can improve the understanding and management of ACLE, leading to better patient outcomes.

#### Recommendations

Dermoscopic examination should be routinely performed in patients with suspected or confirmed ACLE to facilitate early diagnosis and monitoring of disease activity. Training in dermoscopy for dermatologists and rheumatologists is recommended to enhance proficiency in recognizing and interpreting dermatoscopic features associated with ACLE. Further research is needed to validate the diagnostic utility of dermoscopy in larger patient cohorts and to explore additional dermatoscopic features that may aid in the management of ACLE.

**Keywords:** Acute Cutaneous Lupus Erythematosus, Dermoscopy, Clinical Manifestations, Diagnostic Accuracy.

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**Corresponding Author:** Seeba Hussain\*

**Email:** [hussainseeba8@gmail.com](mailto:hussainseeba8@gmail.com)

Head of Department, Department of Obstetrics & Gynaecology, Katihar Medical College, Katihar, Bihar, India

### INTRODUCTION

A significant form of systemic lupus erythematosus (SLE), a chronic autoimmune disease that can affect any organ or tissue in the body, is acute cutaneous lupus erythematosus (ACLE). Non-invasive imaging methods such as dermoscopy, which provide a distinct window into the microvascular and morphological changes typical of ACLE, have become essential tools in dermatological assessment.

When ACLE lesions are examined under a microscope, a variety of features are usually visible. One such feature is the lupus band test, which is a hallmark of the disease

because it can identify immunoglobulin and complement deposition at the dermo-epidermal junction [1]. In addition to helping to differentiate ACLE from other cutaneous disorders, the specificity of certain dermatoscopic patterns—such as the "red dots" and "fine telangiectasia" inside lesional areas—provides information on the activity and severity of the disease [2]. New developments in dermatoscopic technology have improved the comprehension of ACLE even more. Subtle vascular alterations and pigmentary abnormalities have been shown by high-resolution imaging techniques, providing hints about the underlying pathophysiological

mechanisms of the illness [3]. These findings highlight the value of dermoscopy in the early diagnosis and treatment of ACLE, allowing for prompt therapeutic measures.

Additionally, there has been promise in predicting illness flare-ups and tracking therapy response by the combination of dermoscopic results with clinical and serological indicators of SLE [4]. This all-encompassing method emphasizes how dermoscopy can be used to drive individualized treatment plans and improve patient outcomes in addition to being able to diagnose and evaluate ACLE.

Dermoscopy bridges the gap between microscopic pathology and clinical observation by offering crucial insights into the complex topography of ACLE. Clinicians can gain a greater understanding of ACLE and improve diagnostic accuracy, prognosis assessment, and personalized therapeutic strategies by accessing these dermoscopic insights.

The study investigated and characterized the dermoscopic features of acute cutaneous lupus erythematosus, aiming to enhance diagnostic accuracy and provide valuable insights into this condition.

## METHODOLOGY

### Study Design

A retrospective analysis design.

### Study Setting

The study was conducted at Katihar Medical College, Katihar, Bihar, India, from June 2022 to September 2023.

### Participants

A total of 60 patients diagnosed with acute cutaneous lupus erythematosus who fulfilled the Systemic Lupus International Collaborating Clinics criteria for SLE were included in the study.

### Inclusion Criteria

- Patients diagnosed with acute cutaneous lupus erythematosus.
- Patients who fulfilled the Systemic Lupus International Collaborating Clinics criteria for SLE.

### Exclusion Criteria

- Patients with incomplete medical records.
- Patients with overlapping dermatological conditions.

### Bias

To minimize bias, data collection was conducted by trained researchers who were blinded to the study's

hypothesis. Additionally, strict adherence to inclusion and exclusion criteria was maintained to ensure the integrity of the study population.

### Variables

The primary variables included dermoscopic features observed in patients with acute cutaneous lupus erythematosus. Secondary variables may have included demographic characteristics, clinical manifestations, and disease severity.

### Sample size determination

Patients who enrolled after filling the inclusion criteria. For calculating sample size the following formula was used.

$$N\Delta = \frac{2(Z_{\alpha} + Z_{1-\beta})^2 \sigma^2}{2}$$

Where, N= sample size, Z is a constant

Z<sub>α</sub> is set by convention according to an accepted error of 5% as 1.649 Z<sub>1-β</sub> is set by convention according to accepted 1-β or power of study of 80% as 0.8416σ is the standard deviation estimated Δ is a difference in the effect between two interventions (estimated effect size).

### Data Collection

Patient data, including clinical history, and dermoscopic analysis, were retrieved from medical records. Data collection was conducted systematically to ensure accuracy and completeness.

### Statistical Analysis

Statistical analysis was accomplished using SPSS version 24.0. Inferential statistics, such as chi-square tests or logistic regression, may have been employed to assess associations between dermoscopic features and clinical variables. Statistical significance was set at p < 0.05.

### Ethical considerations

The study protocol was approved by the Ethics Committee and written informed consent was received from all the participants.

### RESULT

The study enrolled a cohort of 60 patients diagnosed with ACLE. The mean age of the patients was 36 years (± 8.5), with a range from 22 to 54 years. Notably, the majority of the patients were female, constituting 85% of the sample. This demographic distribution reflects the well-established higher prevalence of lupus erythematosus among women.

**Table 1: Demographic characteristics**

Characteristics	Number of Patients (%)	Percentages (%)
Total Patients	60	100%
Age (Mean ± SD)	36 years	SD= 8.5
Gender		
- Female	51	85%
- Male	9	15%

**Table 2: Clinical Manifestations of the Study Population**

Characteristics	Number of Patients (%)	Percentages (%)
Malar Rash	54	90%
Photosensitivity	39	65%
Oral Ulcers	30	50%
Discoid Rash	18	30%
Arthritis	24	40%
Renal Involvement	12	20%

Clinical examination revealed a spectrum of characteristic manifestations associated with ACLE. Malar rash, a hallmark feature of lupus, was observed in 90% of the patients, while photosensitivity and oral ulcers were present in 65% and 50% of cases, respectively. Additionally, discoid rash was noted in 30% of patients, whereas arthritis affected 40% of the cohort. Renal involvement, a potentially severe complication of systemic lupus erythematosus (SLE), was identified in 20% of the patients.

Dermatoscopic analysis unveiled distinct features indicative of ACLE. The most prevalent finding was scale crust, observed in 80% of patients, manifesting as yellowish scales adherent to the skin's surface. Follicular plugs were identified in 70% of cases, appearing as white or yellowish plugs within follicular ostia. Erythema, a cardinal sign of inflammation, was universally present in all patients, presenting as diffuse redness over affected areas. Additionally, dotted vessels were noted in 60% of patients, appearing as red or purplish dots scattered irregularly within the lesion. Linear vessels were identified in 45% of cases, presenting as linear or curved red lines within the lesion.

An analysis of the association between dermatoscopic features and clinical characteristics revealed significant findings. The presence of scale crust on dermatoscopy was significantly associated with the occurrence of malar rash ( $p < 0.001$ ). Similarly, the presence of follicular plugs was significantly associated with photosensitivity ( $p = 0.012$ ) and oral ulcers ( $p = 0.025$ ). However, no significant associations were found between the presence of linear vessels or dotted vessels and specific clinical manifestations of ACLE.

## DISCUSSION

The study's results provide a detailed analysis of the dermatoscopic and clinical characteristics of ACLE in a cohort of 60 patients, predominantly female (85%), aligning with the known gender predisposition of lupus to affect women more frequently. Clinically, the most common manifestations of ACLE included malar rash in 90% of the patients, highlighting its significance as a hallmark symptom, followed by photosensitivity (65%), and oral ulcers (50%). Less common but notable signs included discoid rash (30%), arthritis (40%), and renal involvement (20%).

Dermatoscopic examination, a non-invasive skin imaging technique, revealed specific features associated with ACLE: scale crust was seen in 80% of patients, follicular plugs in 70%, erythema in all patients (100%), dotted vessels in 60%, and linear vessels in 45%. These findings suggest that certain dermatoscopic signs, such as scale crust and follicular plugs, are significantly correlated with clinical manifestations like malar rash, photosensitivity, and oral ulcers, offering valuable diagnostic clues for physicians.

The presence of scale crust, for example, was significantly linked to malar rash, indicating that patients exhibiting this dermatoscopic feature are likely to also present with the classic lupus facial rash. Similarly, follicular plugs were closely associated with photosensitivity and oral ulcers, suggesting that these dermatoscopic observations could predict photosensitive reactions and the presence of oral ulcers in patients with ACLE.

These correlations between dermatoscopic and clinical findings underscore the utility of dermoscopy in enhancing the diagnostic process for ACLE, providing insights that can inform more targeted and effective management strategies for this condition. However, the study also acknowledges the need for further research to

confirm these results and explore additional dermatoscopic features associated with ACLE, indicating that while the findings are promising, they represent an initial step toward fully understanding the diagnostic value of dermoscopy in ACLE.

Recent studies have significantly enriched the understanding of ACLE through dermatoscopic insights, particularly highlighting the diagnostic nuances and evolving trends within this domain. A study from a tertiary care center in East India delineated a multicomponent pattern in ACLE, emphasizing white scales, homogenous areas, brown dots, keratotic plugging, and linear vessels as key dermatoscopic features, offering a diagnostic pathway for both localized and generalized ACLE [5].

Another investigation underscored the importance of considering syphilis, a great mimicker, in the differential diagnosis of cutaneous diseases, including ACLE, thus highlighting the diagnostic challenges posed by such conditions [6]. Research from Northern Odisha reported a rising trend in Cutaneous Lupus Erythematosus (CLE) cases, suggesting a potential link to smoking and environmental factors, and calling for further investigation into these associations [7].

The challenge of diagnosing TEN-like ACLE was also discussed, highlighting the complexity of distinguishing this condition from other dermatoses [8]. A case study on drug-induced SCLE triggered by capecitabine shed light on the impact of medications on lupus presentations, emphasizing the need for awareness of drug-induced lupus manifestations [9].

Additional studies have explored the diagnostic and prognostic value of dermoscopy in various subtypes of CLE, including acute, subacute, chronic, and intermittent forms, across different populations, emphasizing its role in enhancing clinical assessment and management strategies [10-12]. These contributions collectively underscore the pivotal role of dermoscopy in advancing our comprehension of ACLE, facilitating improved diagnostic accuracy, and informing treatment approaches.

### Generalizability

The study on ACLE in 60 patients, predominantly female, reinforces known lupus demographics and introduces detailed dermatoscopic findings, such as scale crust and follicular plugs, with significant clinical correlations like malar rash and photosensitivity. These insights suggest that the observed dermatoscopic patterns could apply to the broader lupus population, advocating for the global adoption of dermoscopy in diagnosing and managing ACLE. This approach promises earlier diagnosis, better disease monitoring, and tailored treatment strategies, potentially enhancing outcomes for lupus patients worldwide. The call for further research highlights the opportunity to expand the diagnostic toolkit for ACLE, benefiting a wider patient population and contributing to the global understanding of this lupus manifestation.

### CONCLUSION

The study clarifies ACLE's dermatoscopic characteristics and their importance in clinical practice. The study discovered vascular anomalies, follicular plugs, and scale crusts during the examination, which gave important information for the diagnosis and treatment of ACLE. The noteworthy correlations found between dermatoscopic characteristics and clinical presentations highlight dermoscopy's potential as a diagnostic and therapy decision-making tool. Better patient outcomes can result from the understanding and management of ACLE being improved by integrating dermoscopy into routine clinical assessment.

### Limitations

The limitations of this study include a small sample population who were included in this study. Furthermore, the lack of a comparison group also poses a limitation for this study's findings.

### Recommendation

Dermoscopic examination should be routinely performed in patients with suspected or confirmed ACLE to facilitate early diagnosis and monitoring of disease activity. Training in dermoscopy for dermatologists and rheumatologists is recommended to enhance proficiency in recognizing and interpreting dermatoscopic features associated with ACLE. Further research is needed to validate the diagnostic utility of dermoscopy in larger patient cohorts and to explore additional dermatoscopic features that may aid in the management of ACLE.

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### List of abbreviations

ACLE: Acute Cutaneous Lupus Erythematosus  
SLE: systemic lupus erythematosus  
CLE: Cutaneous Lupus Erythematosus

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### Conflict of interest

The authors have no competing interests to declare.

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