Dermatoscopic features of central centrifugal cicatricial alopecia

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Background: No data exist on the dermatoscopic findings in central centrifugal cicatricial alopecia (CCCA).

Objective: We sought to establish the spectrum of dermatoscopic features and their frequency in CCCA.

Methods: We retrospectively evaluated 153 nonpolarized dermatoscopic images obtained from 51 women with histologically proven CCCA and established a list of 12 dermatoscopic features that were independently scored for each image. Controls included 30 dermatoscopic images from histologically proven cases of scarring traction alopecia and discoid lupus erythematosus. The receiver operating characteristic curve analysis assessed the specificity and sensitivity; Cohen kappa statistics assessed the agreement. Dermatoscopic pathologic correlations were performed on the horizontal sections of 41 of the 51 specimens, which were obtained with dermatoscopy-guided biopsy procedures.

Results: Peripilar white gray halo around the emergence of hairs was observed in 94% of patients and was highly specific and sensitive for CCCA in all clinical stages. It corresponds on pathology to the lamellar fibrosis surrounding the outer root sheath.

Limitations: This was a retrospective study.

Conclusion: The presence of a peripilar white halo is a dermatoscopic feature that suggests the diagnosis of CCCA in African American patients with mild central thinning, and it is an optimal site from which to obtain a biopsy specimen. (J Am Acad Dermatol 2014;71:443-9.)

Key words: African; alopecia; CCCA; dermatoscopy; dermoscopy; hair loss; hair pathology; pin-point white dots; trichoscopy; white halo.

Central centrifugal cicatricial alopecia (CCCA) is the most common cause of scarring alopecia among African American women.[1] It is characterized by an area of permanent hair loss that involves the crown and vertex and spreads centrifugally over time.

The etiology of CCCA is not known. The incidence of CCCA in African American women is reportedly higher (5.6%[2] and 16.2%[3]) than in African women (2.7%).[4] Although widespread hair grooming practices among black women have been considered the cause of CCCA for a long time[5]—such as relaxers and hot combs—the largest multicenter epidemiologic study to date, which was conducted in the United States, found no obvious association of extensive hair loss with relaxer or hot comb use.[2] Another study found a positive correlation with the use of traction hair styles, an increased rate of adult acne, difficulty in conceiving, and a history of tinea capitis.[3] A large recent epidemiologic study from South Africa also reported no association between CCCA and either relaxers and traction hair styles.[6]

Although there are no published studies on the dermatoscopic features of CCCA, we have frequently observed peripilar white/gray halos in CCCA patients on dermatoscopy.[7] Our experience indicates that

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dermatoscopy is useful to select the optimal biopsy site in many scarring alopecias, including CCCA.[8] The aim of this paper is to assess the spectrum of dermatoscopic features in patients with CCCA and to establish if the peripilar white/gray halo is a specific and sensitive finding that can help clinicians make a diagnosis of CCCA. We also correlated this dermatoscopic feature with pathologic results.

CAPSULE SUMMARY

- Central centrifugal cicatricial alopecia is a common scarring alopecia in African American women.
- We report the dermatoscopic features of central centrifugal cicatricial alopecia and correlate them with histologic findings.
- These findings will help physicians identify early cases of central centrifugal cicatricial alopecia and select the correct site from which to obtain the scalp biopsy specimen.

METHODS

We retrospectively reviewed the dermatoscopic images of 51 women with pathologically confirmed diagnoses of CCCA between January 2012 and October 2013. The project was approved by the Institutional Review Board of the University of Miami. These included 51 African American women ranging in age from 15 to 59 years (mean, 39.9 years). All patients had clinical and dermatoscopic images obtained with the Fotofinder videodermatoscope (Fotofinder Systems, Bad Birnbach, Germany).

In each case, the pattern and severity of the central hair loss was scored from 0 to 5B according to the photographic scale for CCCA.[1] This scale scores severity of hair loss from 1 (ie, widening of the central part) to 5 (ie, hair loss over the entire top of the scalp). The scale includes an A and B subtype depending on the anatomic area that is more severely affected: frontal (A subtype) or vertex (B subtype). The dermatoscopic images were reviewed independently by both authors. For each patient, we evaluated 3 nonpolarized videodermatoscopic images (at ×20 magnification) taken from posterior, middle, and anterior part of the affected area. We also evaluated the image of the dermatoscopy-guided biopsy site, which was available only for 41 cases and was obtained using a Handyscope (Fotofinder Systems) attached to an iPhone (Apple, Cupertino, CA).

To assess the specificity and sensitivity of selected features, we scored the presence or absence (1 or 0) of the 12 selected features in 30 dermatoscopy images obtained from 10 patients of African descent who were affected by scarring traction alopecia (n = 4) and discoid lupus erythematosus (n = 6), as confirmed by the pathologic results. The receiver operating characteristic curve analysis was used for statistical analysis.

The frequency of each feature was calculated as a percent of the total (n = 51). Agreement was evaluated using Cohen kappa statistics, which incorporate a correction for the extent of agreement expected by chance alone. κ values <0.40 indicate fair agreement, κ values from 0.41 to 0.60 indicate moderate agreement, κ values from 0.60 to 0.80 indicate substantial agreement, and κ values >0.80 indicate almost perfect agreement.

All pathology specimens, obtained as 4-mm punch biopsy specimens, had been processed on horizontal sections and stained with hematoxylin–eosin stain. Specimens were evaluated by 1 dermatopathologist (M.M.) at 4 levels (ie, the level of the bulb, lower follicle, isthmus, and infundibulum) on multiple serial sections (at least 24). The criteria for the diagnosis of CCCA included the following: (1) altered follicular architecture with follicular drop out (follicular scars); (2) loss of sebaceous glands; (3) individual follicles or compound follicular structures with perifollicular fibrosis and/or lichenoid inflammation; and (4) premature desquamation of the inner root sheath.

RESULTS

The clinical severity of CCCA among the 51 studied patients was classified as stage 1 in 15 (29.4%), stage 2 in 14 (27.4%), stage 3 in 3 (5.9%), stage 4 in 14 (27.4%), and stage 5 in 5 patients (9.8%).

Dermatoscopy

The dermatoscopic features are summarized in Table I. They were observed in all clinical stages. Data on sensitivity and specificity of each dermatoscopic feature are included in Table I.

Honeycomb pigmented network. A honeycomb pigmented network was noted in all images (100%). It presented as a homogenous mosaic of contiguous brown, regularly sized meshes encircling hypopigmented areas in 49 cases (96%; Fig 1, *A*). In 2 cases, the mosaic was altered by the presence of irregular brown blotches or white patches.

Peripilar white/gray halo. A peripilar white/gray halo was seen in 48 patients (94%) and was present around hairs within the alopecic patches (Fig 1, *A* and *B*). The halo appeared as a white-grayish circle of 0.3 to 0.5 mm in diameter