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Trichoscopic findings of various cicatricial alopecia among patients attending Shahid Jabar Dermatology and Venereology Teaching Center in Suleymaniyah City

Muheddin Abubakir Mohammed*
Ali Mozan Dhahir El-Ethawi**

Abstract

Background and objectives: Cicatricial alopecia is a group of uncommon disorders of the hair follicle with many causes that can lead to hair destruction of either primary or secondary causes. Trichoscopy is a quick and non-invasive tool that help to establish diagnosis of different types of cicatricial alopecia. The aim of the study was to assess the dermoscopic features of various cicatricial alopecias. **Methods:** Twenty-five patients were included in this study with various types of cicatricial alopecias. Full history and examination was done for all patients. Dermoscopic examination was done for all patients but histopathological examination was done for the patients that required confirmation of the diagnosis when necessary by Hematoxylin and Eosin stain. **Results:** The result of this study dermoscopically revealed that 12 patients had lichen planopilaris (48.0%), 6 had discoid lupus erythematosus (24.0%), 6 had dissecting cellulitis (24.0%) and one patient had pseudopelade of Brocq (4.0%). Absence of follicular opening was a constant dermoscopic feature in all types of cicatricial alopecia participated in this study. Perifollicular erythema was noticed in 72.0% of patients. Enlarged branching vessel was present in 68.0%, followed by peripilar cast, hair tufting, keratotic plug and blue-gray dots represented by 52.0%, 48.0%, 48.0%, and (48.0%), respectively. **Conclusions:** Scalp Trichoscopy is a useful method to help establish the diagnosis of various cicatricial alopecia, yet histopathological examination remains the core diagnostic test.

Key words: Hair follicle, Primary cicatricial alopecia, Scarring, Trichoscopy.

Introduction

Hair and scalp Dermoscopy, also known as “trichoscopy,” is a very useful technique for the diagnosis and follow-up of numerous hair diseases. It is a rapid and noninvasive tool that permits us to recognize morphological struc¬-tures that are not visible to the naked eye[1,2].

Cicatricial alopecias (CA) are a group of uncommon inflammatory hair loss disorders, which are characterized by permanent destruction of hair follicles[3].

Cicatricial alopecia may be divided into a ‘primary or secondary’[3]. Primary scarring alopecia (PCA) include several disorders that affect the hair follicle, destroy bulge stem cells, and cause permanent scarring[3]. Most typical clinical manifestation of cicatricial alopecia is the loss of visible follicular ostia in a scarring area with or without atrophy[4]. The histopathological hallmark of a fully developed lesion is absence of pilosebaceous structure which is replaced by fibrous tissue[5].

In 2001, the North American Hair Research Society (NAHRS) put forward a ‘proposed working classification of the primary cicatricial alopecias’ based on the predominant type of inflammatory cell component. Four groups have been considered as follows: lymphocytic, neutrophilic, mixed, and non-specific. Respectively include discoid lesions of lupus erythematosus (DLE), lichen planopilaris (LPP), pseudopelade of Brocq (PPB), central centrifugal cicatricial alopecia (CCCA), alopecia mucinosa (AM), keratosis follicularis spinulosa decalvans (KFSD) and Graft-versus-host disease, folliculitis decalvans (FD) and dissecting cellulitis (DC), acne keloidalis nuchae (AKN), acne necrotica and erosive pustular dermatosis, cicatricial pemphigoid and busulfan-induced alopecia[6].

Secondary cicatricial alopecia (SCA) are conditions when the follicle is the main target of the disease process3 or

* M.B.Ch.B., Sulaimani University, College of Medicine, Dermatology and Venereology Teaching Center / Sulaimani. Email: muheddinabb@gmail.com
**M.B.Ch.B, FICMS, Assist. Prof, University of Sulaimani, College of Medicine, Sulaimaniyah Dermatology and Venereoplogy Training Center Manager.

may result from trauma (burns, radiation, and traction), infiltrative processes (sarcoidosis, carcinomas) or infection (dermatophyte). In these conditions, the hair follicle is a 'by-stander', unfortunately involved in more global damage in the scalp; thus, permanent hair loss is a secondary event (secondary cicatricial alopecia)[5].

The loss of follicular ostia, which is the most characteristic feature of PCA[5], is probably the most misdiagnosed scalp disorders that frequently cause major distress for the affected patient[3]. It may not be clinically evident in some cases, but could be clearly visualized under trichoscopy[4].

These scalp diseases represent trichologic emergencies because hair follicles are permanently destroyed and therefore the patient might experience disfiguration, psychological embarrassment, and lack of self-esteem. A quick and confident proof of diagnosis and aggressive treatment in the case of active disease are crucial in the management of PCA[3].

Trichoscopy significantly improves the accuracy of the diagnosis of PCA[4]. It is noninvasive, in-office technique that can be performed with a handheld dermoscope or a digital video Trichoscopy system. Trichoscopy helps for magnified observation of five components: (1) Follicular ostia, (2) Interfollicular (epidermal, vascular, and pigment related), (3) Scaling, (4) Hair shaft patterns and (5) Hair roots through the scalp1-5. Thus, Trichoscopy can help clinicians assessing PCA disease activity[4].

The aim of the study was to evaluate the dermoscopic findings of cicatricial alopecia whatever the cause[3].

Patients and Methods

This study included 25 patients with different clinical types of cicatricial alopecia. The selection of the patients was made in Shahid Jabar (Dr Nabaz) Dermatology and Venereology Teaching Center in Suleymaniyah city, Kurdistan Region – Iraq, between periods of October 2018 to April 2019 after being granted a confirmed approval from Kurdistan Board for Medical Specialties. Written informed consent was obtained from each patient [participants] and approved further for the study.

Patients, of any sex at any age, with scarring hair loss that were clinically diagnosed as cicatricial alopecias and that were confirmed with histopathological examination at any period of their disease were included in our study. Any patient with any other scalp lesions rather than cicatricial alopecias was excluded from the study.

All participants in this study were subjected to full history taking embracing present history, including onset, course, duration, progression, personal and family history of similar conditions, and history of any systemic disease or drug intake as well.

General examination was also done to confirm and/or reconfirm diagnoses of any systemic disease. Concerning dermatological examination, full body scan was done to examine the site, size and texture of any skin lesion (if any) and the pattern of hair loss distribution in the scalp.

Ten millimeter elliptical biopsy specimens were taken from the edge of the lesion of each patient. The sample were fixed in the 10% neutral buffered formalin and processed for paraffin embedding. Four micrometer sections were taken from paraffin blocks and stained with Hematoxylin and Eosin [H&E] stain for histopathological examination and diagnosis.

The type of the dermoscope used in the study was DERMLITE DL4, REF DL4.

Dermlite DL4, is a palm sized, that permits scalp visualization at a 10 folds magnification without interface solution. It produced images with a magnification of 50 fold, which helped the lesions to be magnified by the dermoscope. Many different images at a 10 –50 folds magnification were taken and assessed with a conformity to the checklist of trichoscopic features shown in Table (1).

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Table (1): Check list for hair and scalp dermoscopic patterns that can be seen by dermoscopy.

Follicular	Interfollicular and Perifollicular skin Surface	Hair Shafts
Yellow dots	Interfollicular scales	Hair diameter diversities
Pinpoint white dots	Peripilar cast	Short growing hairs
Red dots	Simple red loops	Circle hairs
Blue gray dots	Arborizing red loops	Hair tufting
Keratotic plug	Twisted red loops	Brocken hairs
Gray-white halos	Giant capillaries	
Peripilar cast	Honey comb pigment	
Empty follicles	White patches	
Loss of follicular opening		

Results

During 6 months period of this study, 25 cases of primary cicatricial alopecia were collected, examined and managed in Shahid Jabar (Dr Nabaz) Dermatology and Venereology Teaching Center in Suleymaniyah city. The clinical, dermoscopical and histopathological diagnoses of all 25 patients with CA studied are summarized in Table (2) and (3).

Table (2): Clinical and dermoscopical diagnosis of studied patients.

Clinical diagnosis	No.	%
Lichen planopilaris	12	48.0
Discoid lupus erythematosus	6	24.0
Dissecting cellulitis	6	24.0
Pseudopelade of Brocq	1	4.0

Table (3): Histopathological diagnosis of studied patients.

Histopathological diagnosis	No.	%
Lichen planopilaris	10	40.0
Discoid lupus erythematosus	8	32.0
Dissecting cellulitis	5	20.0
Pseudopelade of Brocq	1	4.0
Folliculitis Decalvans	1	4.0

They were 13 males (52%) and 12 females (48%), their ages ranged from 29–60 years with the mean age of 40.7+8.4. Trichoscopic examination of the 12 patients with LPP revealed absence of follicular opening (100%), perifollicular erythema (66.7%), peripilar cast (66.7%) and pili torti (66.7%). While blue- gray dots, hair tufting, pinpoint white dots, broken hair and enlarged branching vessels were 58.3%, 58.3%, 50.0%, 50.0% and 33.3%, respectively. Meanwhile only 16.7% showed keratotic plug and none of them showed black dots, red dots, yellow dots, white patches, scattered brownish discoloration and ingrown hair, Figures (1) and (2).

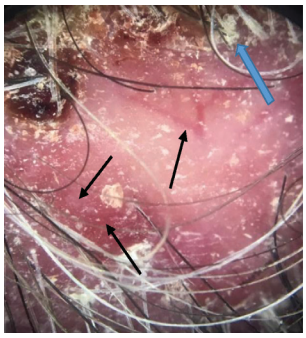

Figure (1): LPP, peripilar cast (Blue arrow), perifollicular erythema (Black arrow)

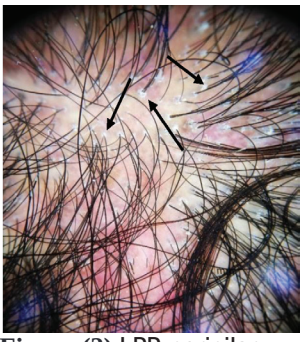

Figure (2): LPP, peripilar cast (black arrow)

Six patients of DLE have revealed a feature of loss of follicular opening (100%), perifollicular erythema (100%) at the periphery of the lesion, keratotic plugging (100%) and enlarged branching vessels (100%). While only 83.3%, 83.3%, 66.7%, 66.7% and 66.7% showed scattered brown discoloration, red dots, blue-gray dots, white patches and peripilar casts, respectively. Meanwhile none of them showed pinpoint white dots, black dots, yellow dots, pili torti, broken hair, hair tufting and ingrown hair, Figure (4) and Table (4).

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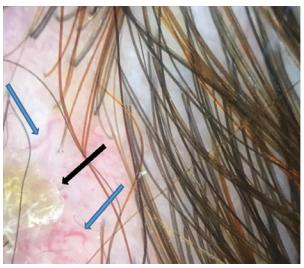
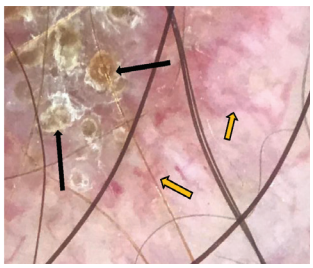
Table (4): Frequency of dermoscopic findings in relation with clinical diagnosis.

Dermoscopic Findings	Clinical Diagnosis of Dermoscopic Findings				No. (%)	p-value
	Pseudopelade of Brocq No. (%)	Lichen Planopilaris No. (%)	Discoid Lupus Erythematosus No. (%)	Dissecting Cellulitis No. (%)		
Absence of follicular opening	1 (4.0)	12 (48.0)	6 (24.0)	6 (24.0)	25 (100.0)	< 0.001
Perifollicular erythema	1 (5.6)	8 (44.4)	6 (33.3)	3 (16.7)	18 (72.0)	0.228
Enlarged branching vessels	1 (5.9)	4 (23.5)	6 (35.3)	6 (35.3)	17 (68.0)	0.005
Absence of villous hair	1 (6.3)	10 (62.5)	0 (0.0)	5 (31.3)	16 (64.0)	0.003
Peripilar cast	1 (7.7)	8 (61.5)	4 (30.8)	0 (0.0)	13 (52.0)	0.03
Hair tufting	0 (0.0)	7 (58.3)	0 (0.0)	5 (41.7)	12 (48.0)	0.019
Keratotic plug	0 (0.0)	2 (16.7)	6 (50.0)	4 (33.3)	12 (48.0)	0.005
Blue-gray dots	1 (8.3)	7 (58.3)	4 (33.3)	0 (0.0)	12 (48.0)	0.047
Red dots	0 (0.0)	0 (0.0)	5 (45.5)	6 (54.4)	11 (44.0)	< 0.001
White patches	1 (9.1)	0 (0.0)	4 (36.4)	6 (54.5)	11 (44.0)	< 0.001
Pili Torti	0 (0.0)	8 (100.0)	0 (0.0)	0 (0.0)	8 (32.0)	0.005
Pinpoint white dots	0 (0.0)	6 (100.0)	0 (0.0)	0 (0.0)	6 (24.0)	0.036
Yellow dots	0 (0.0)	0 (0.0)	0 (0.0)	6 (100.0)	6 (24.0)	< 0.001
Scattered brown discoloration	1 (16.7)	0 (0.0)	5 (83.3)	0 (0.0)	6 (24.0)	< 0.001
Broken hairs	0 (0.0)	6 (100.0)	0 (0.0)	0 (0.0)	6 (24.0)	0.036
Black dots	0 (0.0)	0 (0.0)	0 (0.0)	4 (100.0)	4 (16.0)	0.002



Figures (3): DLE, enlarged branching vessels (Blue arrow), keratotic plugging (Black arrow)



Figures (4): Keratotic plugs (Black arrow), enlarged blood vessels (Yellow arrow)

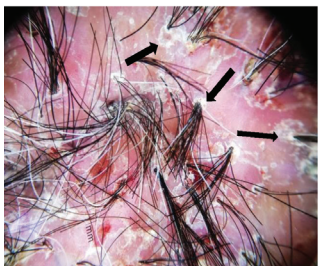


Figure (5): DC [FD], Hair tufting and follicular plugging (black arrow)

Figure (6): DC [FD] Hair tufting and follicular plugging (Black arrow)

Dermoscopic features of 6 patients with dissecting cellulitis showed absence of follicular opening (100%), red dots (100%), yellow dots (100%), white patches (100%), enlarged branching vessel and subcorneal hemorrhage (100%). While only 83.3%, 66.7%, 66.7% and 50.0% showed hair tufting, black dots, keratotic (follicular) plugging and perifollicular erythema, respectively. Meanwhile none of them showed blue-gray dots, pinpoint white dots, peripilar cast, scattered brownish discoloration, pili torti and broken hair, Figures (5) and (6).

The last patient showed findings while cross checking with check-list Table (1) positive for absence of follicular opening, blue-gray dots, white patches, perifollicular erythema, peripilar cast, enlarged branching vessels and scattered brown discoloration. As the negative finding were black dots, red dots, yellow dots, keratotic plug, pili torti, broken hair, hair tufting and ingrown hair. We considered this patient as a pseudopelade of Brocq, as a diagnosis of exclusion.

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Discussion

Hair and scalp dermoscopy known as well as trichoscopy is a very important, useful technique for the diagnosis and follow-up of numerous hair and scalp diseases. It is a rapid, handy, non-invasive tool that permits dermatologist to recognize the morphological appearance of the structures that are not visible to the naked eye[2]. Cicatricial alopecia is considered as a trichologic emergency as hair follicles will permanently be destroyed, therefore, faster and confident diagnosis and appropriate aggressive treatment is essential in the management and prognosis of scarring alopecia[3]. In our study, lichen planopilaris was the most common cause of cicatricial alopecia[7,8]. Lichen planopilaris most commonly affect middle aged female. Scalp itching is one of the usual co-presentations of the disease and it is directly proportional to the disease activity. Irregular areas of cicatricial alopecic patches were observed with a partial hair loss and the follicles in the alopecic areas were having perifollicular erythema, follicular spines and scarring. We found absence of follicular opening alternatively in 100% of the patients, perifollicular erythema in 66.7% and Peripilar cast in 66.7% as well, which was not detected by Kandil AH et al3 but Rakowska A et al[9] found that Peripilar cast was constant feature in 87.7%[10]. Instead, bluish deep discoloration and large white dots were most characteristic features detected by Kandil AH et al[3]. This difference may be explained by the early stage of the lesions on diagnosis.

We found blue-gray dots and hair tufting in 58.3% of the patients, compared to only 45% of the patients detected by Mubki T et al[11]. White dots were seen in only half of the patients, which corresponds to the fibrotic tracts that oriented vertically in histopathology and may be seen in all types of primary cicatricial alopecia. White dots were seen in all patients studied by Tostia A et al[12]. This may be explained by the diagnosis of the LPP patients in their early stage of the disease. Discoid lupus erythematosus of the scalp in our study was not as common as LPP, and one of the patients had a cutaneous discoid lupus erythematosus as well. All patients showed absence of follicular opening, perifollicular erythema and keratotic plug and they were a prominent Dermoscopic features of DLE. Dilated, plugged follicular ostia, surrounded by dilated branching vessels were also noticed. Thick arborizing blood vessels were found in 100% of the patients which is almost consistent with a study done by Mubki T et al[11] who found thick arborizing blood vessels in almost all patients with DLE. It is worthy to mention that thick arborizing blood vessels were seen in 80% of cases of DLE by Rakowska A et al[9]. This consistently indicates that thick arborizing blood vessels are a major criterion for the diagnosis of DLE. In 83.3% of DLE patients, we have noticed a dark brown discoloration. This finding is near and parallel to the finding detected in 70.0% of the patients with DLE by Mubki T et al[11] and Rakowska A et al[9]. Although it is uncommon, yet dissecting cellulitis is an important and sometime a debilitating disease. We have encountered 6 patients with dissecting cellulitis which were included in this study and one of them had also Hidradenitis suppurativa. All patients were young adult male and the lesion were in posterior vertex and occiput. We have noticed absence of follicular opening, red dots and hair tufting in almost all patients[13-15]. The dermoscopic feature imposed over dystrophic hair shafts was 3D yellow dots.

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We have noticed keratotic plug and perifollicular erythema in only half of the patients, which is consistent with Rudnicka L et al[10]. All our dissecting cellulitis patients had subcorneal hemorrhage. Dermoscopic features of Pseudopelade of Brocq in our study include absence of follicular opening, perifollicular scaling and no features of inflammation. Diagnosis of Pseudopelade of Brocq was a diagnosis of exclusion clinically and dermoscopically; thus matches with Kandil et al[3] and Rakowska a et al[9]

Conclusions

Lichen Planopilaris was a common presentation of cicatricial alopecia, presenting the center of our study. A constant dermoscopic feature was absence of follicular opening and perifollicular erythema, peripilar cast and pili torti were frequent dermoscopic features. Practical and useful method that can help with establishing a diagnosis of LPP and other different types of scalp cicatricial alopecia that allow a rapid and aggressive management of different types of cicatricial alopecia in case of active disease in order to expect a better prognosis. Yet histopathological examination remain the core diagnostic test.

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