Original Article

An Effective and Practical Diagnostic Clinical Method in Primary Scarring Alopecia: Dermoscopy

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Abstract

Objective: There are several studies on the dermoscopy of the cicatricial alopecia. When the national literature is reviewed, however, only one original study focusing on the subject exists. Here, we aimed to investigate the dermoscopic features of the patients with primary cicatricial alopecia. **Materials and Methods:** In this study, dermoscopic findings of 40 patients with clinical and histopathological diagnosis of primary cicatricial alopecia were retrospectively reviewed. Dermoscopic examination was performed by a handheld dermoscope with 10-fold magnification. Photographing was performed using a dermoscope attached to a cell phone camera with 2-fold digital zoom. **Results:** Tubular perifollicular scale in lichen planopilaris (n = 12), cutaneous clefts with emerging hairs and three-dimensional yellow dots in dissecting cellulitis (n = 6), tufted hairs in folliculitis decalvans (n = 6), and follicular plugs and branching vessels in discoid lupus erythematosus (n = 6) were the main findings. No characteristic finding was found for pseudopelade of Brocq (n = 8) and frontal fibrosing alopecia (n = 2). **Conclusion:** Dermoscopy is a noninvasive, effective, and practical diagnostic tool for the differential diagnosis of primary cicatricial alopecia. The retrospective nature, lack of a control group, and relatively small number of the patients are the main limitations of our study.

Keywords: Alopecia, dermoscopy, handheld dermoscope, primary cicatricial alopecia, trichoscopy

Introduction

Hair has an important role in personal appearance and self-perception. In this context, hair diseases and hair loss not only may affect physical and mental health, but also can cause important problems in psychosocial sense.[1] So that, early diagnosis and treatment of hair diseases is crucial.

Cicatricial alopecia refers to a form of alopecia that results in an irreversible damage in hair follicle. In primary cicatricial alopecia, target of the inflammatory process is hair follicle and interfollicular area is relatively preserved. This inflammatory process results fibrosis in the hair follicle corresponding permanent hair loss clinically. Lichen planopilaris (LPP), pseudopelade of Brocq (PB), folliculitis decalvans (FD), dissecting cellulitis (DS), frontal fibrosing alopecia (FFA), and discoid lupus erythematosus (DLE) are the most common causes of primary cicatricial alopecia.[2,3]

The permanent nature of hair loss rises the importance of early diagnosis and differential diagnosis of primary cicatricial alopecia. Although physical examination provides important clues to diagnosis, in some cases, biopsy and histopathological examination may be needed.

There are several studies in the relevant literature regarding the dermoscopic diagnosis of cicatricial alopecia. However, to the best of our knowledge, there is only one original research focusing on the subject in the relevant Turkish literature.[4] In this study, we aimed to investigate the dermoscopic findings of primary cicatricial alopecia cases.

Materials and Methods

In this study, age, sex, symptoms, disease durations, and dermoscopic images of the cases having clinical and histopathological diagnosis of primary cicatricial alopecia were retrospectively reviewed. Patients who admitted to

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the outpatient dermatology clinic of Ahi Evran University Training and Research Hospital between December 2017 and September 2018 were included in the study. Dermoscopic examination was performed using a Dermlite II ProHR polarized handheld dermoscope with ×10 (Dermlite, San Juan Capistrano, California, USA). The lesions were photographed with a dermoscope attached to a high-resolution mobile camera phone using ×2 digital zoom. Thus, ×20 fold magnification was obtained. The entire lesional skin was examined and photographed for all the cases. All the images obtained were examined, and the findings detected were recorded. Diseases causing noncicatricial alopecia such as psoriasis and seborrheic dermatitis and the causes of secondary cicatricial alopecia such as tinea capitis profunda and physical trauma were excluded. All the procedures followed the Helsinki declaration, and the study was approved by the local clinical research ethics committee.

Statistical analysis

Statistical analysis was performed using SPSS 24.0 software (SPSS Inc., Chicago, Illinois, USA). Arithmetic mean, standard deviation, and ratio were used in the analysis of the demographic parameters (age and sex). The diagnostic value of the dermoscopic data in each disease group was calculated using diagnostic sensitivity and specificity tests.

Results

The study included a total of 40 patients (14 males and 26 females). The mean age of the patients was 35.9 ± 6.6 years. The demographic data and mean disease durations are detailed in Table 1. The most common presenting symptom was hair loss. Itching and pain were the other presenting symptoms. Twelve patients had LPP, 8 had PB, 6 had DS, 6 had FD, 6 had DLE, and 2 had FFA. All the

Table 1: The demographic features and the mean disease durations

Diseases	Number of cases (n=40)	Mean age	Female/male ratio	Mean disease duration (year)
DS	6	31.5±7.5	0:6	1.5±0.89
FD	6	38.6±7.4	1:5	1.05±0.62
LPP	12	30.5±7.1	5:7	1.3±1
DLE	6	31.3±6	4:2	2±1.3
FFA	2	48±5.6	0:2	3.5±0.7
PB	8	36.6±5.8	4:4	4±2

PB: Pseudopelade of Brocq, LPP: Lichen planopilaris, FD: Folliculitis decalvans, DS: Dissecting cellulitis, DLE: Discoid lupus erythematosus, FFA: Frontal fibrosing alopecia

Table 2: The dermoscopic findings and their frequencies

Finding	DS (n=6), n (%)	FD (n=6), n (%)	LPP (n=12), n (%)	DLE (n=6), n (%)	FFA (n=2), n (%)	PB (n=8), n (%)
Epidermal scale	3 (50)	4 (66.6)	6 (50)	2 (33.3)	-	3 (37.8)
Perifollicular extending scale	3 (50)	6 (100)	9 (75)	1 (16.6)	-	-
Perifollicular tubular scale	2 (33.3)	-	10 (83.3)	-	-	-
Follicular plug	1 (16.6)	-	-	6 (100)	-	-
Epidermal erosion/ulceration	2 (33.3)	2 (33.3)	3 (25)	-	-	-
Cutaneous cleft with emerging hair	5 (83.3)	-	-	-	-	-
Honeycomb pigmentation	2 (33.3)	-	-	2 (33.3)	2 (100)	4 (50)
Cicatricial white structureless areas	6 (100)	6 (100)	10 (83.3)	5 (83.3)	2 (100)	8 (100)
Red structureless areas	6 (100)	6 (100)	10 (83.3)	2 (33.3)	-	-
Yellow structureless areas	-	-	2 (16.6)	1 (16.6)	-	-
Irregular linear vessels	4 (66.6)	5 (83.3)	3 (25)	4 (66.6)	-	3 (37.8)
Branched vessels	-	2 (33.3)	-	3 (50)	-	-
Three dimensional yellow dots	2 (33.3)	-	-	-	-	-
Dotted vessels	5 (83.3)	5 (83.3)	4 (33.3)	3 (50)	-	2 (25)
Coiled vessels	-		2 (16.6)	2 (33.3)	-	-
Broken hairs	6 (100)	-	3 (25)	1 (16.6)	-	-
Black dots	6 (100)	-	3 (25)	-	-	-
Yellow dots	2 (33.3)	-	-	-	-	-
White dots	1 (16.6)	-	-	-	-	-
Scattered dotted pigmentation	-	-	-	3 (50)	-	-
Pili torti	1 (16.6)	-	2 (16.6)	-	-	-
Tufted hairs	-	6 (100)	2 (16.6)	2 (33.3)	-	-

PB: Pseudopelade of Brocq, LPP: Lichen planopilaris, FD: Folliculitis decalvans, DS: Dissecting cellulitis, DLE: Discoid lupus erythematosus, FFA: Frontal fibrosing alopecia

cases were evaluated for a total of 24 different dermoscopic findings [Table 2].

Perifollicular tubular scale was present in 10 (83.3%) LPP cases [Figure 1]. This finding was detected in only 2 of the remaining 28 patients and both of them had DS. The sensitivity and specificity of this finding in the diagnosis of LPP were 83.3% and 92.8%, respectively.

All of the patients with PB (n = 8) had cicatricial white structureless areas whereas 4 (50%) patients showed honeycomb pigmentation pattern [Figure 2].

Cutaneous cleft with emerging hair [Figure 3a] was detected in 5 (83.3%) DS cases and none of the remaining 35 cases showed this finding. The three-dimensional yellow dots [Figure 3b] were another remarkable finding for DS. This finding was also not detected in any of the remaining cases. Cicatricial white and red structureless areas, broken hairs, and black spots were the other findings observed in all of the DS cases. The sensitivity and specificity of the cutaneous cleft with emerging hair finding for the diagnosis of DS were 83.3% and 100%, respectively. All of the FD cases (100%) showed tufted hairs [Figure 4]. Two (16.6%) LPP and 2 DLE (33.3%) cases also demonstrated tufted hairs. Cicatricial white and red structureless areas were observed in all of the FD cases [Figure 4]. The sensitivity and specificity of the tufted hairs finding for the diagnosis of FD were 100% and 88.24%, respectively. Follicular plugs were detected in all of the DLE cases (100%) [Figure 5a]. Among the remaining 34 cases, only one DS case had this finding. Scattered dotted pigmentation [Figure 5b] was detected in half (50%) of the DLE cases, and this finding was not observed in any of the remaining 34 cases. The sensitivity and specificity of the follicular keratotic plug for DLE were 100% and 97%, respectively. The sensitivity and specificity of the scattered dotted pigmentation were 50% and 100%, respectively. Two patients had FFA and both showed two dermoscopic findings: cicatricial white areas and honeycomb pigment pattern [Figure 6]. All the dermoscopic findings observed and their frequencies are detailed in Table 2.

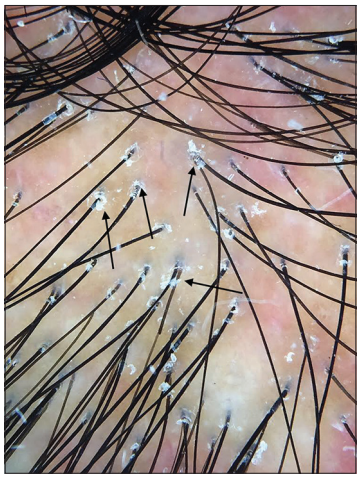

Figure 1: Perifollicular tubular scale in lichen planopilaris (black arrow)

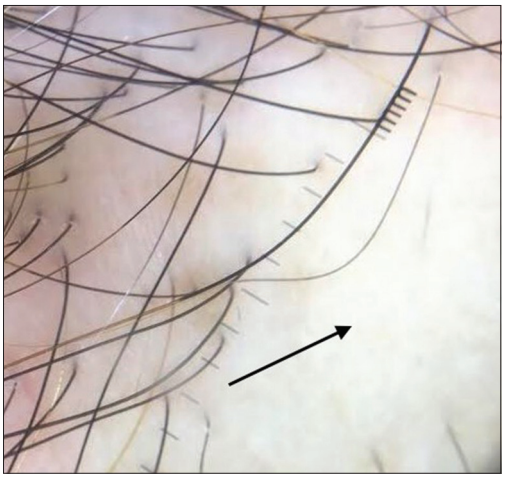

Figure 2: White cicatricial structureless areas in pseudopelade of Brocq (black arrow)

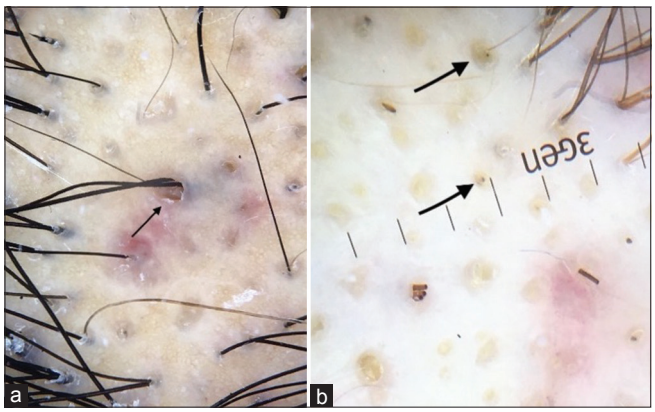

Figure 3: (a) Cutaneous cleft with emerging hair in dissecting cellulitis (black arrow) and (b) three-dimensional yellow dots in dissecting cellulitis (black arrow)

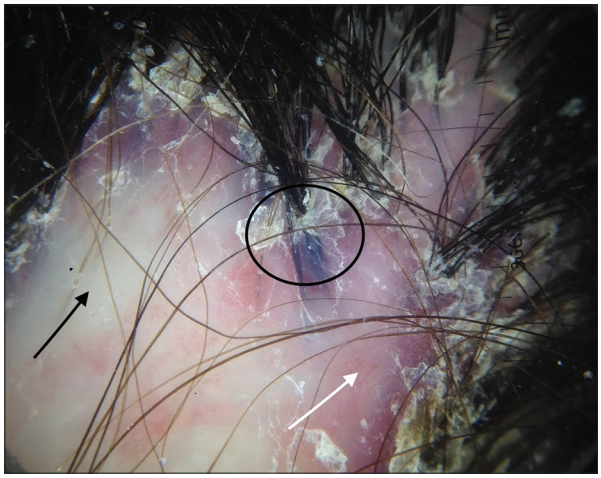

Figure 4: Tufted hairs (black circle), cicatricial white structureless areas (black arrow), and red structureless areas (white arrow) in folliculitis decalvans

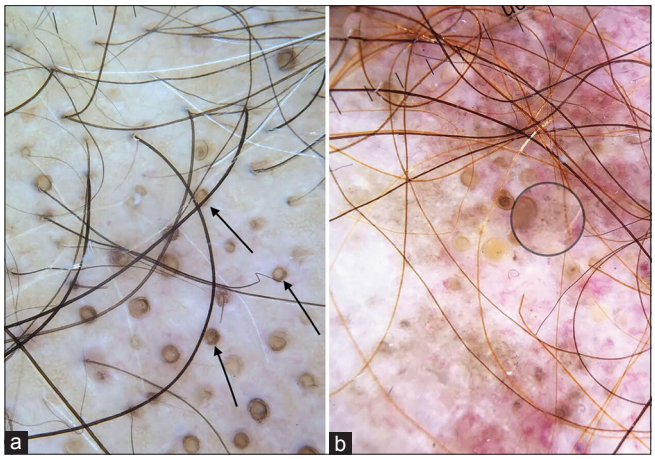

Figure 5: (a) Follicular plugs in discoid lupus erythematosus (black arrow). (b) Scattered dotted pigmentation in discoid lupus erythematosus (circle)

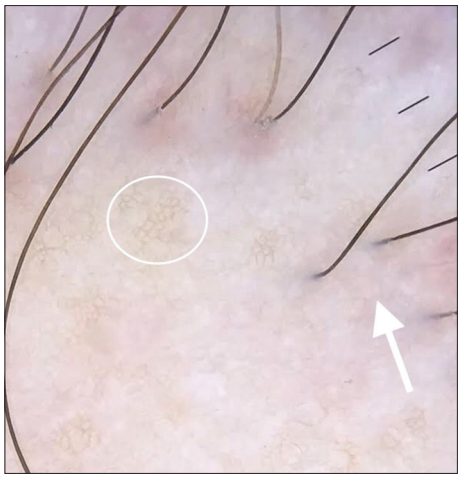

Figure 6: Cicatricial white structureless areas (white arrow) and honeycomb pigmentation pattern (circle) in frontal fibrosing alopecia

Discussion

Hair diseases constitute a remarkable part of daily dermatology practice. Although it is usually possible to diagnose alopecia with a thorough clinical history and physical examination, it becomes difficult to make a definitive diagnosis in cases showing no characteristic clinical features. Histopathological examination, as an invasive diagnostic method, can be used in such cases. However, it usually does not provide specific findings. All these difficulties in the diagnostic process, particularly in cases of cicatricial alopecia, raise the search for new diagnostic methods.[5,6]

Recently, dermoscopy has emerged as a noninvasive diagnostic tool in the diagnosis of alopecia and various researches describing dermoscopic findings of cicatricial and noncicatricial alopecias have been published.[7,8] To the best our knowledge, however, the most comprehensive study reported from Turkey so far is a research, in which 29 cases including 24 primary and 5 secondary cases of cicatricial alopecia were analyzed.[4]

In another study reported from Turkey, handheld dermoscopic findings of 21 primary cicatricial alopecia cases were investigated.[9] In our study, a total of 40 cases of primary cicatricial alopecia were analyzed in terms of the handheld dermoscopic findings.

In the present study, we detected white cicatricial areas reflecting permanent follicle loss in 37 cases. In 2 LPP and 1 DLE cases where this finding was not detected, the presence of red structureless areas indicating active stage of the disease along with follicle loss was remarkable. Based on this finding, we suggest that initial dermoscopic examination of the lesions should be focused on the presence or absence of white and red structureless areas making possible the differential diagnosis of cicatricial and noncicatricial alopecia.

When reviewing the relevant literature, it seems that there are few studies on the dermoscopic features of DS.[7,10,11] Rakowska *et al*. described the three-dimensional yellow dots (a yellow dot resembling a soap bubble along with an emerging dystrophic hair) in 8 DS cases in a study including 84 cicatricial alopecia cases.[7] In another study, again Rokawska *et al*. described the "cutaneous cleft with emerging hairs" for DS.[11] In the study of Abedini *et al*. investigating the validity of trichoscopic findings in primary cicatricial alopecia, however, none of the six cases with DS showed the above-mentioned two findings.[12] We detected three-dimensional yellow dots and cutaneous cleft with emerging hair in two and five DS cases, respectively. The fact that the cutaneous cleft finding was not detected in any of the remaining cases of cicatricial alopecia suggests that this finding can be considered quite characteristic for DS.

In spite of absence of the studies including a large series focused on dermoscopic findings of FD, tufted hairs are considered to be a characteristic finding for FD.[4,7] In our study, the presence of tufted hairs in all of six FD cases supported this view. We observed tufted hairs also in two LPP and two DLE cases. In the study of Abedini *et al*., tufted hairs were detected in 40% and 7.1% of the FD and LPP cases, respectively.[12]

LPP is known as a form of lichen planus affecting hairy skin. Tubular perifollicular scale has usually been considered a characteristic dermoscopic finding for LPP.[4,7,13,14] In our study, perifollicular tubular scale was detected in 10 out of 12 cases with LPP. We detected this finding also in two DS cases. The presence of this finding in only 2 out of the remaining 28 cases supports the opinion that the finding is very suggestive of LPP. The sensitivity and specificity of perifollicular tubular scale finding for the diagnosis of LPP were 83.3% and 92.8%, respectively. In the study of Abedini *et al*., the sensitivity and specificity of this finding for LPP were 91.4% and 88.2%, respectively.[12]

Loss of follicular openings, follicular plugs, branching vessels, honeycomb pigment pattern, and follicular red dots are the dermoscopic findings described for scalp localized DLE.[15-17] In our study, follicular keratotic plugs were observed in all six DLE cases. This finding was found in only one DS case

out of the remaining 34 cases. On the other hand, DLE cases were found to be rich in vascular structures. Irregular linear, branching, dotted, and coiled vessels were detected in 4, 3, 3, and 2 cases, respectively. The sensitivity and specificity of follicular keratotic plugs in the diagnosis of DLE were 100% and 97%, respectively. In the study of Abedini *et al*., the sensitivity and specificity of the same finding were 57.1% and 89.8%, respectively.[12] In our study, the sensitivity and specificity of scattered dotted pigmentation in the diagnosis of DLE were 50% and 100%, respectively. In the study of Abedini *et al*., the sensitivity and specificity of this finding were 7.1% and 96.8%, respectively.[12]

FFA is considered a subtype of LPP resulting in cicatricial alopecia in the frontal region, especially in women. The absence of follicular openings, perifollicular scale, and perifollicular erythema are the dermoscopic findings described for FFA.[18,19] We detected brown reticular pigmentation (which was thought to be related to sun exposure due to long-term hair loss) and white structureless areas reflecting follicular loss in both FFA cases.

PB is classified as a specific type of primary cicatricial alopecia by some authors, while some authors argue that it is the end stage of many types of cicatricial alopecia.[20] Trichoscopic findings of the entity are not specific. None of the eight PB cases included in the present study had a history of erythema and inflammation, indicating that the condition may have developed secondary. In this context, all the PB cases included were considered as primary cicatricial alopecia. No specific dermoscopic findings have been reported in BPP cases in the relevant literature.[21] We also did not observe a specific clue to PB. Cicatricial white structureless areas, epidermal scales, and honeycomb pigmentation pattern were the dermoscopic findings detected for PB in the present study.

Conclusion

Making easy to evaluate follicular loss, dermoscopy can be used as a firstline ancillary diagnostic method in the diagnosis of cicatricial and noncicatricial alopecia. On the other hand, cutaneous cleft and tufted hairs seem to be quite characteristic findings for DS and FD, respectively. We think that these findings may serve as useful clues to differential diagnosis of the two entities. Characteristic follicular plugs of DLE and tubular perifollicular scales of LPP may also provide useful clues to the differential diagnosis. When it comes to PB, dermoscopy may be valuable regarding the exclusion of the other causes of cicatricial alopecia. The retrospective nature, lack of a control group, and relatively small number of the patients are the main limitations of our study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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