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Trichoscopy of Primary Cicatricial Alopecia

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Abstract

Background: Cicatricial alopecias are classified into primary and secondary types according to the initial site of inflammation. In primary cicatricial alopecias (PCA), the hair follicle is the main target of destruction; the term secondary cicatricial alopecia implies that follicular destruction is not the primary pathologic event. Cicatricial alopecia is a trichologic emergency state which requires a fast and confident confirmation of diagnosis, as well as aggressive treatment in the active stage of the disease to guard against permanent destruction of hair follicles therefore trichoscopy may be applied as a quick and non-invasive method that helps in the differential diagnosis of diverse diseases leading to cicatricial alopecia.

Objective: To evaluate the potential benefit of trichoscopy in the clinical diagnosis of primary cicatricial alopecia.

Methods: Trichoscopic examination for 24 patients suffering from PCA using the DermLite II Pro and 3X optical zoom by Samsung S4 Zoom camera and their dermoscopic findings were reported.

Results: Our results revealed that among these 24 patients, who presented with PCA, 7 had lichen planopilaris (LPP), 5 had discoid lupus erythematosus (DLE), 5 had folliculitis decalvans (FD), 4 had central centrifugal cicatricial alopecia (CCCA), 2 had dissecting cellulitis (DC) and 1 had keratosis follicularis spinulosa decalvans (KFSD). The most characteristic dermoscopic findings in each disease were as follows: perifollicular scales and peritubular casts in LPP, follicular plugging in DLE, Hair tufting and pustules in FD, hypotrichosis and white structureless areas in CCCA, diffuse white area and 3D yellow dots in DC and follicular keratosis in KFSD.

Conclusion: Trichoscopy is a noninvasive tool that significantly improves the accuracy of the diagnosis of PCA.

Introduction

Cicatricial alopecias are a group of intractable and uncommon hair loss disorders characterized by permanent hair follicle destruction [1-5] .The most typical clinical manifestation of cicatricial alopecia is the loss of visible follicular ostia in a scarring area [4,5]. The histopathological hallmark of a fully developed lesion is the replacement of the hair follicle structure by fibrous tissue [1,5,6]. Primary cicatricial alopecia (PCA) is a group of disorders, in which the hair follicle is the main target of destructive inflammation resulting in irreversible hair loss [4,5,7-9].

PCA were divided into subgroups depending on the predominating inflammatory infiltrates. Chronic cutaneous lupus erythematosus (CCLE), lichen planopilaris (LPP), Classic pseudoplade of Brocq (CP), central centrifugal cicatricial alopecia (CCCA), alopecia mucinosa (AM) and keratosis follicularis spinulosa decalvans (KFSD) were categorized as "lymphocytic" PCA. Frontal fibrosing alopecia (FFA) and Graham-Little syndrome (GLS) were considered as LLP variants. The neutrophilic PCA group comprised folliculitis decalvans (FD) and dissecting cellulitis ／ folliculitis (perifolliculitis abscedens et suffodiens) (DC ／ DF). Acne keloidalis (AK), acne necrotica (AN) and eruptive pustular dermatosis (EPD) were classified as "mixed" cell infiltrate PCA [2].

The loss of follicular ostia, which is the most characteristic feature of PCA, may not be clinically evident in some cases, but could be clearly visualized under trichoscopy. Indeed, trichoscopy significantly improves the accuracy of the diagnosis of PCA [4]. Other PCA-associated signs, such as perifollicular erythema or scale, hair tufting are also detectable [10]. Thus trichoscopy can helps clinicians assessing PCA disease activity [11].

Patients & Methods

Clinical and dermoscopic examination was performed for 24 patients suffering from PCA using the DermLite II Pro (3Gen, Inc., San Juan Capistrano, California, USA.) and 10X optical zoom by Samsung S4 Zoom camera (Samsung Electronics Co., Ltd., Yeongtong-Gu Suwon-Shi, South Korea) and their dermoscopic findings were reported.

Results

Among these 24 patients, 7 had LPP, 5 had DLE, 5 had FD, 4 had CCCA, 2 had DC, 1 had KFSD.

Dermoscopic findings in each disease were as follows:

Dermoscopic examination of the LPP patients revealed perifollicular scales in (85.7%), peritubular casts in 57% of patients, while white dots, violaceous background, red dots were founded in 42.8%, 28.5%, 28.5% of LPP patients respectively and 14.2% had each of the following hypotrichosis, diffuse white erythematous areas, broken hairs, thin hairs, perifollicular hyper pigmentation, white structureless area **Figure (1)**.

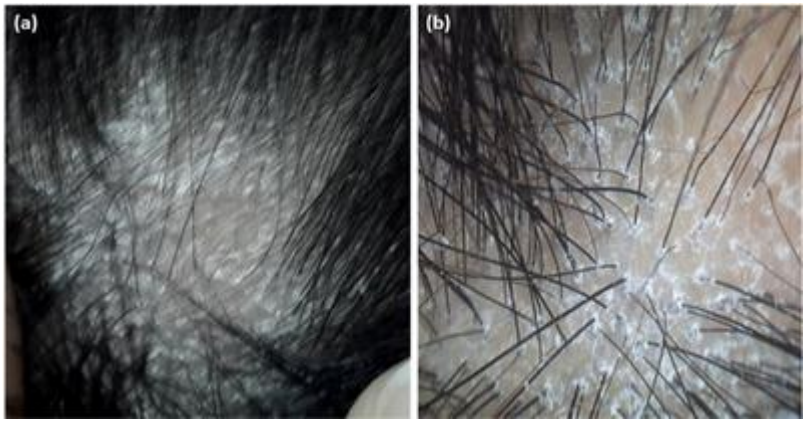

Fig.1 (a) Clinical image of LPP patient, **(b)** dermoscopic images (non contact, polarized, 10x) showing hypotrichosis, perifollicular scales, peritubular casts and violaceous background.

Five patients of DLE showed follicular plugging in 100% of patients, arborizing blood vessels in 80%, 40% had each of the following diffuse white erythematous areas, chrysalis like structures, diffuse scales, red dots, diffuse erythematous background while 20% had each of hypotrichosis, black dots, micro ulcers, vellus hair, short cut-off hairs, large yellow dots, zigzag hair, subcorneal hemorrhage, serpentine and comma- shaped blood vessels, peripheral brown globules, yellow dots and amicrobial pustulosis **Figure (2)**.

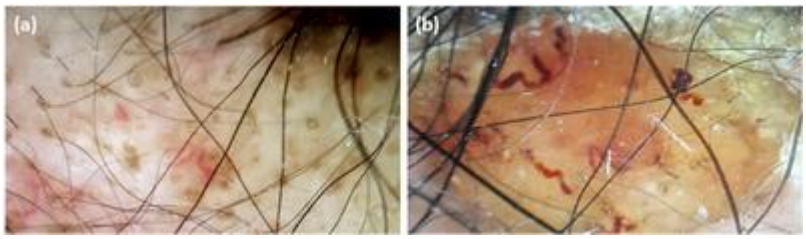

Fig.2 Dermoscopic images (non contact, polarized) (a- 10x) (b- 30x) of DLE patients shows **(a)** Hypotrichosis, follicular plugging, arborizing, serpentine and comma- shaped blood vessels **(b)** Amicrobial pustulosis.

Hair tufting was present in 100% of FD patients, 80% had each of diffuse erythematous areas and pustules, while absent follicular ostia, hypotrichosis, single pig tail like hair, zigzag hair, yellow dots, sub corneal hemorrhage and dark homogeneous structureless area each were present in 20% of FD patients **Figure (3)**.

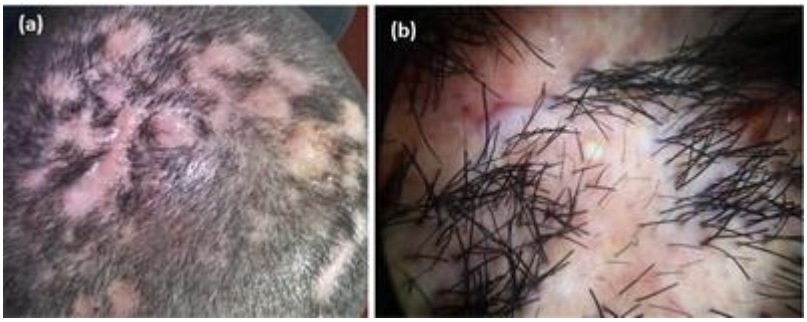

Fig.3 (a) Clinical image of FD patient, **(b)** dermoscopic image (non contact, polarized, 30x) showing hair tufting & pustules.

In CCCA patients 75% had hypotrichosis, 50% had white dots and white structureless areas, decrease follicular ostia, hair thinning and single pig tail hair each were present in 25% of CCCA patients **Figure (4)**.

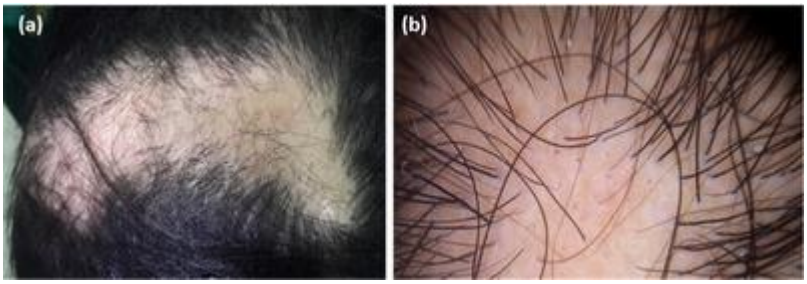

Fig.4 (a) Clinical image of CCCA patient, **(b)** dermoscopic image (non contact, polarized, 30x) showing hypotrichosis, white structureless areas and decreased follicular ostia.

All the DC patients had diffuse white area, while 50% had each of the following: hair tufting, subcorneal hemorrhage, follicular plugging, follicular pustules, linear irregular blood vessels, arborizing blood vessels, black dots and 3D yellow dots **Figure (5)**.

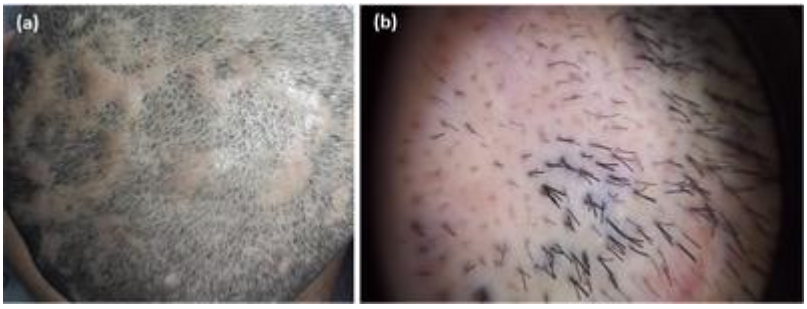

Fig.5 (a) Clinical image of DC patient, **(b)** dermoscopic image (non contact, polarized, 30x) showing White structureless areas & hair tufting.

The dermoscopic finding of KFSD was black dots, follicular keratosis, short cut-off hairs, hypotrichosis, perifollicular scales and honeycomb appearance in addition to short cutoff lashes and follicular scales **Figure (6)**.

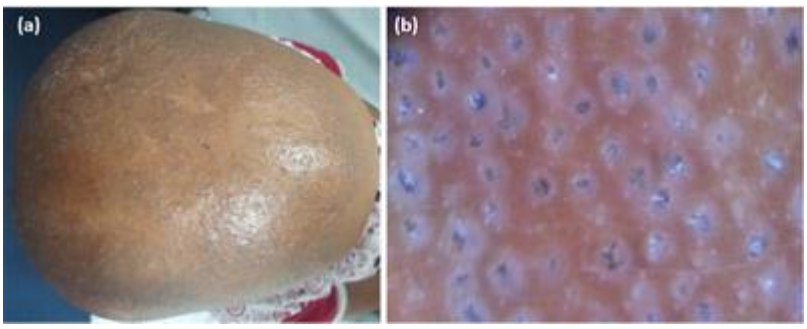

Fig.6 (a) Clinical image of KFSD patient, **(b)** dermoscopic image (non contact, polarized, 30x) showing follicular keratosis, short cut-off hairs, hypotrichosis & perifollicular scales.

Discussion

Cicatricial alopecia, also called scarring alopecia, represents a "trichologic emergency" because hair follicles are permanently destroyed so a fast and confident confirmation of the diagnosis, as well as aggressive treatment in the case of active disease, is crucial in the management of scarring alopecia [12]. Trichoscopy may be applied as a quick and non-invasive auxiliary method in differential diagnosis of diverse diseases leading to cicatricial alopecia [13].

The category of primary cicatricial alopecia includes a diverse group of inflammatory diseases of the hair follicles. In PCA, the hair follicle is the prime target of the destruction as opposed to secondary cicatricial alopecia, which is caused by a cutaneous, but not specifically folliculocentric, inflammatory process that eventually encroaches on the follicle and ultimately destroys it [12].

Primary cicatricial alopecia was classified into 3 main groups: (1) lymphocytic, (2)

neutrophilic, and (3) mixed, based on the nature of the inflammatory cells observed histologically in and around affected hair follicles [2,14].

Lymphocytic Primary Cicatricial Alopecia including:

Lichen planopilaris:

Lichen planopilaris is the most frequent cause of adult primary scarring alopecia [15-17]. Three variants of the disease may be distinguished: classic LPP, FFA [18] Graham Little syndrome[19,20] .The classic form of LPP are characterized by a violaceous follicular erythema and perifollicular keratotic lesions [16,19] .The most characteristic trichoscopic features of LPP are perifollicular scaling, tubular perifollicular hyperkeratosis, perifollicular inflammation, violaceous areas [13,21] and this constant to our result which found that the main dermoscopic finding in our LPP patients was perifollicular scales in(85.7%), peritubular casts in 57% and a violaceous background 28.5%, of LPP patients .

Discoid lupus erythematosus:

Discoid lupus erythematosus (DLE) lesion begins as a well-demarcated round or oval purplish macule or papule and enlarges into an alopecic patch with follicular plugging, erythema, and adherent scaling. The lesions may be hypo- or hyperpigmented [22].The most characteristic trichoscopic features of DLE are keratotic plugs, thick arborizing vessels, scattered dark-brown discoloration, and blue-gray dots[13,21] Similar to our result the five patients of DLE showed follicular plugging while 80% had arborizing blood vessels and 20% had peripheral brown globules.

CCCA:

Central centrifugal cicatricial alopecia (CCCA) is the most common cause of scarring alopecia among African American women [23]. It is characterized by an area of permanent hair loss that involves the crown and vertex and spreads centrifugally over time. Miteva and Tosti in 2014, stated that there were no published studies on the dermatoscopic features of CCCA [24], so they retrospectively reviewed the dermatoscopic images of 51 women with pathologically confirmed diagnoses of CCCA [25] and their results revealed that the most common dermoscopic finding of CCCA were Honeycomb pigmented network, terminal hairs, vellus hairs, peripilar white halo, pin-point white dots, white patches, erythema, scales, asterisk-like brown blotches, broken hairs and dark peripilar halo. Also our results revealed that 75% of our CCCA patients had hypotrichosis and 50% had white dots and white structureless areas.

Keratosis Follicularis Spinulosa Decalvans

This inherited condition causes follicular keratotic papules and pustules producing progressive cicatricial alopecia. Dermoscopic features are very similar to those of LPP, showing decreased hair density with loss of follicular openings, hyperkeratotic perifollicular white scales, perifollicular erythema, and occasionally perifollicular pustules [26]. We had only 1 patient with KFSD who had most of this dermoscopic finding (follicular keratosis, short cut off hairs, hypotrichosis and perifollicular scales).

Neutrophilic Primary Cicatricial Alopecia including:

Folliculitis Decalvans:

The disease predominantly involves the vertex and occipital area of the scalp. The hallmark of folliculitis decalvans is the presence of multiple hairs emerging from one single dilated follicular opening, other signs included recurrent follicular pustules, erythema, dark yellow-gray scales, follicular hyperkeratosis, erosions, and hemorrhagic crusts, most prominent around the follicles. In the course of the disease, small to extensive irregularly shaped patches of cicatricial alopecia develop [3,16,27,28]. Trichoscopy of folliculitis decalvans shows tufted hairs, perifollicular hyperplasia [13], yellowish tubular scaling and follicular pustules, white and milky red areas lacking follicular openings [13,21]. In constant to this, hair tufting was present in 100% of our FD patients, and 80% had each of diffuse erythematous areas and pustules, while absent follicular ostia, hypotrichosis, and dark homogeneous structureless area each were present in 20% of FD patients.

Dissecting cellulitis

Is a chronic, progressive, inflammatory disease that occurs most commonly in young adults [17]. The disease usually starts with occlusion of follicular openings on the scalp vertex or occiput. Later, perifollicular pustules, nodules, and abscesses with interconnecting sinus tracts develop. Nodules are firm or fluctuant and contain purulent material, tufted hairs may be present [27,29-31]. In dissecting cellulitis, trichoscopy shows yellow structureless areas and 3D yellow dots imposed over dystrophic hair shafts. Black dots, pinpoint-like vessels with a whitish halo occasionally are present [21]. End-stage fibrotic lesions are characterized by confluent ivory-white or white areas lacking follicular openings [13,21]. All our DC patients had diffuse white area and subcorneal hemorrhage, while 50% had each of the following hair tufting, follicular plugging, follicular pustules, linear irregular blood vessels, arborizing blood vessels, black dots and 3D yellow dots.

Conclusion

Trichoscopy could be applied as a quick and non-invasive method that help the early diagnosis of different types of cicatricial alopecia allowing rapid as well as aggressive treatment in the case of active disease in order to slow down the progression of the condition.

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