Hair and scalp dermatoscopy

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Dermatoscopy is a noninvasive diagnostic tool that allows the recognition of morphologic structures not visible by the naked eye. Trichoscopy (scalp dermatoscopy and videodermatoscopy) is useful for the diagnosis and follow-up of hair and scalp disorders. However, it is not widely used in the management of hair disorders. This review provides updated information from the literature and our experience on the dermoscopic features of the most common hair and scalp disorders. This will enable dermatologists to make fast diagnoses of tinea capitis and alopecia areata, distinguish early androgenetic alopecia from telogen effluvium, and differentiate scarring from nonscarring alopecia. (J Am Acad Dermatol 2012;67:1040-8.)

Key words: alopecia; hair disease; hair loss; nonscarring alopecia; scalp disease; scarring alopecia; trichoscopy; videodermatoscopy.

The dermoscopic examination of the hair and scalp is known as trichoscopy.[1] This is a very useful technique for the diagnosis and follow-up of hair and scalp disorders.[2-5]

This review summarizes the current knowledge on dermatoscopy of the normal scalp and alopecia. A review of the literature regarding hair dermatoscopy was completed by using PubMed, MEDLINE, and MeSH search engine. Key search terms included: "hair," "scalp," "dermatoscopy," "videodermatoscopy," "dermatoscopy," "trichoscopy," "alopecia," "hair loss," and the specific names of the most common types of alopecia. The most common dermatoscopic findings in hair and scalp disorders, including specific diagnostic features, and their pathological correlations are summarized in Tables I and II.

Abbreviations used:

AA: alopecia areata
AGA: androgenetic alopecia
DLE: discoid lupus erythematosus
FFA: frontal fibrosing alopecia
LPP: lichen planopilaris

DERMATOSCOPY DEVICES

All dermatoscopes can also be used for trichoscopy. However, optimal evaluation of scalp vascular patterns requires a magnification greater than ×20. Images can be acquired by attaching the dermatoscope (Dermlite, 3 Gen LLC, San Juan Capistrano, CA) to a digital camera, which also allows for the zooming of the images.[6,7] Special dermatoscopes that attach to the iPhone (Apple, Cupertino, CA) have been developed by FotoFinder Systems (Handyscope, Bad Birnbach, Germany) and Canfield (DermScope, Fairfield, NJ). Several computerized dermoscopic systems can be used for trichoscopy.[8] However, most trichoscopy data have been obtained with the FotoFinder Dermoscope.[3,9,10] Trichoscopy can be performed either with or without alcohol/water as interface solution.[10] Dry dermatoscopy is useful to examine scalp conditions with diffuse or perifollicular scaling.[11]

NORMAL SCALP

There are only 3 studies on dermatoscopy of the normal scalp, all in Caucasians.[10,12,13] In the healthy scalp there are evenly spaced groups of few hair shafts coming out of the same follicular ostium. Rakowska et al[12] reported that the temporal scalp had mostly single- and double-hair units and the occipital scalp, triple-hair units. The mean hair thickness was 0.061 ± 0.008 mm in the frontal versus 0.058 ±.007 mm in the occipital scalp.

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Normal scalp vessels include interfollicular simple red loops and arborizing red lines.[2,10] Interfollicular simple red loops are multiple fine, red, hairpin-shaped structures that correspond to the capillaries in the dermal papillae. Arborizing red lines are vessels of larger caliber that correspond to the subpapillary vascular plexus,[14] The honeycomb pigmented network, which comprises a homogenous mosaic of contiguous brown rings, can be found in chronic sun exposure and in subjects with dark skin.[2] The pigment resembles the pigmented network seen in melanocytic lesions on dermatoscopy.[15]

Interfollicular pinpoint white dots can be seen in the sun-exposed scalp of phototypes III and IV and in the normal scalp of V and VI.[16] They appear as small (0.2-0.3 mm) white dots distributed regularly in the interfollicular scalp, dispersed among the mosaic pigmented network. They have been correlated with the acrosyringeal and follicular openings.[16,17]

Fu et al[13] identified dirty dots as a normal finding in the scalps of 10 of 19 healthy children. Dirty dots represent nonmicrobial environmental particles and are easily removed after shampooing.

CAPSULE SUMMARY

- Trichoscopy is useful for the diagnosis and follow-up of hair and scalp disorders. Although it is a noninvasive technique it is not widely used.
- We provide updated information about the dermoscopic findings that allows diagnosis of scarring and nonscarring alopecia along with inflammatory and infectious scalp disorders.
- This article will enable dermatologists to make fast diagnoses of tinea capitis and alopecia areata, distinguish early androgenetic alopecia from telogen effluvium, and differentiate scarring from nonscarring alopecia.

INFLAMMATORY AND INFECTIOUS SCALP DISORDERS

Seborrheic dermatitis and psoriasis

Dermatoscopy is very useful to distinguish scalp seborrheic dermatitis form scalp psoriasis based on the vascular pattern.[10,18]

The vascular pattern of psoriasis is characterized by twisted loops (100% of the cases)[10] (Fig 1). Kim et al[19] recently evaluated with dermatoscopy 55 patients with scalp psoriasis and 41 patients with seborrheic dermatitis. They concluded that vascular patterns allow distinguishing the two conditions. In psoriasis they describe red dots and globules (most common in their series), twisted red loops, and glomerular vessels.[19] It is, however, important to keep in mind that twisted loops appear as dots on low magnification (up to ×20).[2] In seborrheic dermatitis the most common patterns are arborizing vessels and atypical red vessels in the absence of red dots and globules.[19]

Tinea capitis

The comma hairs, which are slightly curved, fractured hair shafts, have been described as the dermoscopic marker of tinea capitis in Caucasian children with *Microsporum canis*.[20,21] Hughes et al[22] reported the corkscrew hairs as an additional dermoscopic finding of tinea capitis in African American children (Fig 2). They can be seen both in *Microsporum* and *Trichophyton* infections.[23] Broken and dystrophic hairs are also seen.[22]

Infestations

Dermatoscopy, is a very practical and reliable method for the diagnosis of pediculosis capitis as it is able to differentiate lice nits containing nymphs from empty nits of hatched parasites and from amorphous pseudonits and hair casts.[24] Hair sprays and gels can stick to the hair, yielding misleading clinical signs for pediculosis capitis.[3,25]

Dermatoscopy can be used to diagnose scabies in an unusual location on the scalp.[26]

NONSCARRING ALOPECIA

Androgenetic alopecia

Dermatoscopy of androgenetic alopecia (AGA) is characterized by hair diameter variability greater than 20%, which is a very important distinguishing feature.[27] Recently, in analogy to anisocytosis in hematology, the term "anisotrichosis" has been proposed to describe diversity of hair shaft diameter observed in AGA.[28] Hair shaft variability can also be observed in patches of alopecia areata (AA). However, in AA dermatoscopy shows uniform miniaturization instead of hair shafts with different degree of thinning. Hair diameter variability is very useful to detect early AGA, including AGA in children.[29]

Rakowska et al[12] proposed major and minor dermoscopic criteria for diagnosing AGA. Major criteria include: (1) more than 4 yellow dots in 4 images (×70 magnification) in the frontal area; (2) lower average hair thickness in the frontal area compared with the occiput; and (3) more than 10% of thin hairs (<0.03 mm) in the frontal area. Minor criteria include: (1) increased frontal to occipital ratio of single-hair pilosebaceous units; (2) vellus hairs; and (3) perifollicular discoloration. Presence of two major criteria or one major plus two minor criteria