

# Trichoscopy of Alopecia Areata: A Diagnostic Aide

Balachandra Ankad<sup>\*</sup>, Savitha L Beergouder, Vijaylaxmi S Panchkattimath and Masroor Sheik Ahmed

Department of Dermatology, S. Nijalingappa Medical College, Bagalkot, Karnataka state, India

\*Corresponding author: Dr. Balachandra S. Ankad, Associate Professor, Department of Dermatology, S. Nijalingappa Medical College, Near APMC, Navanagar, Bagalkot-587103, Karnataka, India; Tel: 91 9980410056; Fax: 91 8354 235360; E-mail: drbsankad@gmail.com

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#### Abstract

**Objective:** Alopecia areata (AA) is a common, chronic disorder presents as patchy loss of hair on the scalp, beard area, eyebrows and other parts of body. Trichoscopy, dermoscopy of hair, is a non-invasive diagnostic tool which helps in visualization of subsurface features. Diagnosis of AA is easy, however, diffuse alopecia, alopecia on the eyebrows, patients presenting with total loss of hair can pose problem in identifying this condition. Trichoscopy, showing particular and specific patterns, can be utilized to diagnose this condition. Objective of our study was to identify the specific patterns of trichoscopy AA.

**Methods:** Fifty patients with AA were included in the study. Dermlite 3 dermoscope (10X magnifications) with polarized light was employed in the study.

**Results:** A total of 50 patients were evaluated and trichoscopy showed yellow dots, exclamation mark hairs, broken hairs, black dots, short vellous hairs in 25 (50%), 30 (60%), 15 (30%), 10 (20%), 05 (10%) patients respectively.

**Conclusion:** Trichoscopy demonstrates definitive and specific patterns in AA. It helps not only in diagnosis of AA but also identifies activity and severity of AA. Yellow dots were observed in every stage of AA and black dots, exclamation mark hairs, broken hairs were demonstrated in active disease.

**Keywords:** Trichoscopy; Alopecia areata; Yellow dots; Exclamation mark hairs; Broken hairs; Black dots

#### Introduction

Alopecia areata (AA) characterized by patchy loss of hair due to abrupt arrest of hair cycle and formation of fractured cadaverized hairs, miniaturized nanogen hairs, short re-growing vellus hairs, dystrophic and telogen (tapered) hairs [1,2].

Clinical diagnosis of AA is not difficult; however, sometimes it throws diagnostic challenges. It is impossible to know the activity and severity of AA on clinical examination by naked eyes. Trichoscopy reveals specific patterns in AA and these patterns can be utilized to diagnose, to know the severity and disease activity of AA.

The trichoscopy findings can vary depending on the stage, site and severity of the disease [1-3]. Black dots (BDs) and exclamation mark hairs (EMH) on trichoscopy are the most specific findings in AA and correlate well with disease activity whereas yellow dots (YDs) are seen in all the stages of the disease and correlate with disease severity [4,5]. Our objective was to evaluate the trichoscopic patterns of AA.

#### Materials and Methods

This study was conducted in department of dermatology in S Nijalingappa Medical College, Bagalkot, South India from December 2013 to April 2014. It was a case series study. A total of 50 patients with clinically diagnosed AA lesions were evaluated by trichoscopy. Informed consent was taken from patients and ethical clearance was obtained by the institutional ethical committee. Dermlite 3 dermoscope (10X magnification) with polarized light was employed in the study. Sony camera (Digital, 14 Mega pixels) was attached to save the images. Initially, ultrasound gel (Although polarized dermoscopy was employed, ultrasound gel was used for better visualization and image quality) was applied either on the faceplate of dermoscopy or on the skin lesions and then lesions were observed through the eyepiece of dermoscopy. Data collected were analyzed and tabulated in Microsoft excel sheet. The results are presented in proportions and percentages.

#### Results

Totally 50 patients were included in the study with 30 male and 20 female patients. The mean age of the patients was 29 years youngest being 3 years and oldest being 55 years. The mean duration of AA was 19 months shortest being 2 months and longest being 36 months. All patients had lesions confined to scalp. Patchy alopecia with single patch was present in 50% (25 patients) and multiple patches were observed in 46% (23 patients). Two patients (4%) had alopecia totalis. YDs (Figure 1, yellow stars), EMH (Figure 2, red arrows), broken hairs (BH) (Figure 2, yellow arrows), BDs ((Figure 1, red arrows), short vellous hairs (SVH) (Figure 3, red arrows) were observed in 25 (50%), 30 (60%), 15 (30%), 10 (20%), 05 (10%) patients respectively. Patients with shorter duration (<6 months) showed EMH and BDs and long standing (>6 months) cases revealed dystrophic hairs, white dots (Figure 4, black arrows) and honey comb pattern (HCP) (Figure 4, yellow arrows). YDs were demonstrated at all stages of AA.



Figure 1: Trichoscopy showing yellow dots (yellow stars) and black dots (red arrows).



**Figure 2:** Trichoscopy demonstrating exclamation mark hairs (red arrows) and broken hairs (yellow arrows).



Figure 3: Trichoscopy showing short vellous hairs (red arrows).



**Figure 4:** Trichoscopy demonstrating white dots representing eccrine duct openings (black arrows) and honey comb pattern (yellow arrows). Cotton wool like pattern (red arrows) due to coalescence of white dots is also demonstrated.

### Discussion

Trichoscopy is a well-established diagnostic technique in hair diseases for the purpose of diagnosis and follow-up. In active disease, trichoscopy reveals YDs, BDs, dystrophic hairs and EMH [6].

YDs, initially proposed by Ross et al., are yellow colored round or polycyclic dots and they represent distended follicular infundibulum consisting of degenerating keratinocytes and sebum. They are better visualized with polarized light [7]. YDs constitute the most sensitive feature of AA, however, they are also observed in androgenetic alopecia and alopecia incognito. YDs in AA are keratinous and in AGA, they represent sebaceous debris [7]. Inui et al., observed YDs in 63.7% of cases in contrast to a study by Ross et al., where 94.8% cases with AA had YDs [8,9]. Other authors reported the incidence of YDs in 81.8% [10] and 57.3% [11]. The incidence of YDs in our study was 50%. The low incidence in our study may be attributed to small sample size and darker skin color of our patients which impairs the visualization of YDs under dermoscopy.

EMH, also referred to as tapering hairs, are characterized by wider diameter in the distal shaft with tapering towards proximal shaft. This pattern marks presence of the lymphocytic inflammatory infiltrate affecting the hair bulb and thus, producing thinner hair shaft [6]. EMH are observed in most active cases of AA, however, they are not specific to AA as they may be seen in trichotillomania [7]. EMH were seen in 31.7% cases of AA by Inui et al. and 12.1% cases by Mane et al. [8,10]. EMH were demonstrated in 30% cases in our study which was consistent with the previous studies.

The activity of disease is characterized by dystrophic hairs with fractured roots and telogen hairs and they appear as broken hairs (BHs) on trichoscopy. This is due to moderate affection of follicles in AA. BHs were demonstrated in varying proportions from 37.33% to 55.4% of AA patients in literature [8,10,11]. BHs were observed in 30% patients in our study.

Black dots (BDs) are pigmented points seen in yellow dots and they represent fractured hairs at level of skin surface. Formerly known as

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"cadaverized hairs", BDs are sensitive markers of disease activity as well as severity. BDs are not appreciated well in patients with fairer skin due hair color and resistance of cuticle [5]. In our study, BDs were seen in 20% of cases. Authors of previous studies observed BDs ranging from 44.3% to 67.7% cases of AA [8,10].

Coudability sign (Figure 5, red arrows) is proposed as a marker of disease activity in AA. It represents terminal hair that kinks towards proximal end when hairs are pushed perpendicularly [7]. It was demonstrated in 5 (10%) patients in our study.



Figure 5: Trichoscopy showing coudability sign (red arrows).

SVH are sensitive markers of hair re-growth. They appear either as coiled hair as pigtail pattern as described by Rudnicka or lighter pigmented hairs tapering towards distal end [7]. In our study, 20% demonstrated the presence of SVH with one patient showing pigtail pattern (Figure 6, yellow arrows).



Figure 6: Trichoscopy demonstrating pigtail hair pattern (yellow arrows) and white dots are also seen (black arrows).

Our findings were consistent with the previous studies conducted by various authors where in SVH were observed in 72.7% and 40.9% of cases [8,10]. Hedge et al observed 68% SVH in their study [11]. However, short vellous hairs appearing as pigtail pattern was not described in these studies.The lower incidence of SVH in our study was probably due to higher incidence of untreated patients in the study.

Interestingly, two unusual trichoscopic patterns were observed in two patients with alopecia totalis. The first unusual pattern was honey comb pattern (HCP) which is a pigment network, characterized by grid and holes. Grid represents hyperchromic melanocytes in rete ridges and holes represent hypochromic areas in epidermis overlying tips of dermal papillae [1]. This pattern is classically seen in normal scalp and in advanced AGA and it is due to excessive sun exposure on bald areas [7]. Appearance of this pattern in alopecia totalis in the present study can be explained on basis of excessive sunlight exposure as a result of total baldness of scalp in alopecia totalis.

The second unusual pattern was white dots which appear as pinpoint hypopigmented spots. They represent eccrine duct openings and are regularly arranged. These should not be confused with white dots seen in lichen planopilaris sparing interfollicular epidermis which represent destroyed follicles that are replaced by fibrous tracks [1]. Authors also demonstrated few white areas appearing like cotton wool pattern (Figure 4, red arrows) as a result of coalescence of white dots. None of the studies have mentioned about this entity in AA. Hence authors propose that these two patterns can be demonstrated in alopecia totalis of longer duration. Furthermore, studies on alopecia totalis involving large sample size are recommended to evaluate these patterns.

## Conclusion

Trichoscopy is a non-invasive diagnostic tool which can be utilized in AA to know activity and severity of disease. EMH, BDs, BH represent severity as well as activity and yellow dots are observed in every stage of AA. Short villous hairs represent hair re-growth, and hence they negatively correlate disease activity. And finally, honey comb pattern and white dots are observed in alopecia totalis of longer duration.

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