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Original Article

Trichoscopic features in diagnosis of alopecia areata and its relation to severity of alopecia tool (SALT) score

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Abstract

Objective To assess the trichoscopic features of alopecia areata, and determine correlation between the findings and the severity of alopecia tool (SALT) score .

Methods A cross-sectional study was done on 67 patients in Amrita Institute, Kochi, who were clinically diagnosed with alopecia areata of scalp. Patients were examined using Heine Delta 20 Plus dermoscope.

Results Yellow dots were the most common finding on trichoscopy, seen in 86.6% of patients. Black dots were next most common finding, seen in 68.7% of patients, followed by broken hair (59.7%), vellus hair (49.3%) and tapering hairs (25.4%). Grey hair was seen in 11.9% and coiled hair in 7.5% patients. There was a significant relationship between vellus hair and lower SALT score. This study did not find any significant association between the other trichoscopic features of alopecia areata and clinical type or SALT score.

Conclusion Scalp lesions in alopecia areata show characteristic features on trichoscopy, such as yellow dots, black dots, broken hair, vellus hair and tapering hair. Trichoscopy is a quick, easy tool in the diagnosis of alopecia and it can be a non-invasive alternative to skin biopsy.

Key words
Trichoscopy, severity of alopecia tool (SALT) score, alopecia areata.

Introduction

Alopecia areata is a chronic, nonscarring alopecia with variety of patterns of patchy hair loss, diffuse alopecia, alopecia totalis and universalis, ophiasis. Many other conditions like tinea capitis, trichotillomania, secondary syphilis, androgenetic alopecia or telogen effluvium can present with nonscarring alopecia.[1-3]

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Trichoscopy is a noninvasive method for image analysis of hair and scalp. Trichoscopic features in alopecia areata can aid in confirming diagnosis of alopecia areata, and can be a noninvasive alternative to scalp biopsy.[4,5]

This study was undertaken to assess the trichoscopic features of alopecia areata, and correlation between the findings and the severity of alopecia tool (SALT) score. As trichoscopy is a relatively new tool, only a few studies have been done to assess trichoscopic findings in alopecia areata.

Methods

A cross-sectional study was conducted in Amrita Institute of Medical Sciences, Kochi during the period 2014-2016. Approval was obtained from the DRC and Ethical Committee of Amrita School of Medicine.

The study group included all patients clinically diagnosed with alopecia areata affecting the scalp. A total of 67 patients were enrolled in this study. After getting informed consent, clinical details of all study subjects were recorded. SALT score was calculated based on formula given below. Trichoscopic examination of scalp lesions was done using Heine Delta 20 Plus dermoscope, and findings were noted for each quadrant of the scalp. Data were tabulated and statistically analyzed using SPSS software.

Method for calculating SALT score Scalp was divided into 4 areas: the vertex – 40% of scalp surface area, right profile of scalp 18%, left profile of scalp 18%, posterior aspect of scalp 24%.

Percentage of hair loss in each area was calculated as following: Percentage of hair loss in vertex = nv. Percentage of hair loss in right scalp = nr. Percentage of hair loss in left scalp = nl. Percentage of hair loss in posterior scalp = np. SALT score = (nv × 0.4) = (nr × 0.18) + (nl × 0.18) + (np × 0.24)

SALT score was entered as S1 < 25, S2 25-49, S3 50-74, S4 75-99 and S5 100.

Statistical analysis Numerical variables were expressed as mean and standard deviation. To examine trichoscopic findings frequency and percentages were applied. To determine relationship between trichoscopic features of Alopecia Areata and SALT score and clinical subtype, chi square/ Fisher's exact test was used.

Results

67 patients participated in this study. **Table 1** shows sex distribution and age of patients.

Yellow dots were the most common finding on trichoscopy, seen in 86.6% of patients. Next common finding was black dots, seen in 68.7 % of patients. Broken hair was seen in 59.7% of patients and vellus hair in 49.3% of patients. Tapering hair was present in 25.4% patients, grey hair in 11.9% and coiled hair in 7.5% patients. **Table 2** summarizes the frequency of each trichoscopic feature in our patients. **Figure 1** and **2** is a trichoscopic image from a patient with multiple patches, showing tapering hair, broken hair and black dots.

Table 1 Age and sex distribution of study population (n=67).

	N (%)
Sex	
Male	37 (55.2)
Female	30 (44.8)
Age (years)	
<10	6 (8.9)
11-20	14 (20.9)
21-30	18 (26.9)
31-40	13 (19.4)
>41	16 (23.9)

Table 2 Trichoscopic features in the study population (n=67).

Features	*N (%)*
Yellow Dots	58 (86.6)
Black Dots	46 (68.7)
Broken hairs	40 (59.7)
Vellus hairs	33 (49.3)
Tapering hairs	17 (25.4)
Grey hair	8 (11.90
Coiled hair	5 (7.5)

Table 3 SALT score of the study population (n=67).

Salt score	*N (%)*
1 (Less than 25%)	43 (64.2)
2 (25-49%)	7 (10.4)
3 (50-74 %)	6 (9.0)
4 (74-99%)	3 (4.5)
5 (100%)	8 (11.9)

Table 4 Vellus hairs vs SALT score.

SALT score	*Vellus hair*		*p value*
	Yes	*No*	
I (43)	36 (37.2%)	27 (62.8%)	0.010
II & III (13)	16 (11%)	2 (15.4%)	

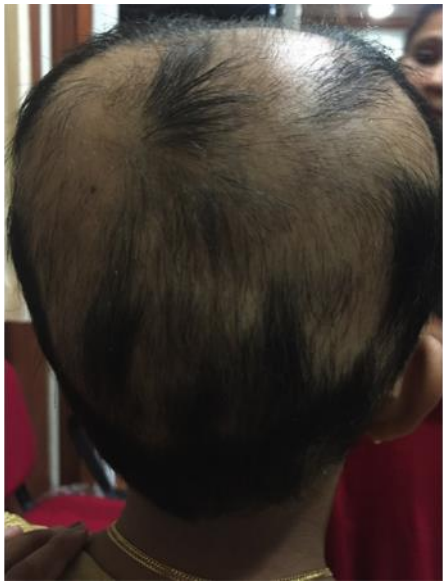

Figure 1 Patchy alopecia areata.

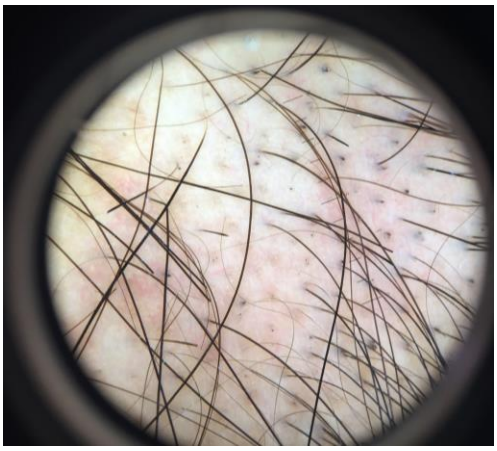

Figure 2 Tapering hair, broken hair, black dots seen by trichoscope.

SALT score of 1 (S1) was seen in 64.2% of patients, SALT score of 2 in 10.4%, and 3,4,5 were seen in 9%, 4.5% and 11.9% **(Table 3)**. There was a significant relationship between vellus hair and lower SALT score **(Table 4)**. The study did not find any significant association between other trichoscopic features and SALT score.

Discussion

This study had a slight male preponderance, with 55% male patients and 45% females. 56.8% of patients were below 30 years. 58.2% developed symptoms before age of 30 years, as reported previously.[1-3]

SALT score of 1 (S1) was seen in 64.2% patients. Low SALT score in our study correlated with the presence of vellus hairs.

The most common trichoscopic findings were yellow dots (86.6%), black dots (68.7%), broken hair (59.7%). A recent Indian study observed that in patients with alopecia areata, the most frequent findings were yellow dots (87.5%), black dots (79%) and exclamation mark hair (70.9%).[5]

Yellow dots were the most common trichoscopic feature, present in 86.6% of patients. Other studies by Mane *et al*.[6], Inui *et al*.[7], Shim *et al*.[8] and Hegde *et al*.[9] also showed similar results

Yellow dots are considered to be the most sensitive trichoscopic feature of AA. They represent follicular openings filled with keratinous debris mixed with sebum. In alopecia areata, they are probably due to degenerating follicular keratinocytes. Variation in incidence according to race is observed e.g. 95% of European patients, 60% of Asian patients and 40% of Brazilian patients showed yellow dots.

The differences in frequency of yellow dots may be attributed to hair oil use.[10] Our study was done in Kerala, where use of hair oil is common.

Black dots were seen in 68.7% of patients in this study. Mane *et al*.[6] observed black dots in 67.7% patients. Inui *et al*.[7] and Shim *et al*.[8] observed lower figures of 44.3% and 42%, respectively. A higher incidence of 84% was observed by Hedge *et al*.[9] Lower frequency of black dots was

reported in European individuals.[6-8] Black dots are thought to be a sensitive marker not only for disease activity but also for the severity of alopecia areata.[6-8]

Broken hairs were seen in 59.7% of our patients. 55.4%, 45.7% and 37.3% were observed in other studies.[6-8] Broken hairs are considered a clinical marker of disease activity and severity.[2]

Vellus hair was observed in 49.3% of patients in our study while it was reported as 40.9% and 48% in other studies.[6,7] Hegde *et al*.[9] found a higher incidence of 85%.

Vellus hair demonstrates non-destructive nature of alopecia areata, with new hair growth seen as unpigmented, thin, hair shafts. Vellus hair is characteristic of resolving disease, and is higher in treated patients.[5]

Prevalence of tapering hair in our study was 25.4%. Mane *et al*.[6] reported a lower incidence of 12.1%, and Hegde *et al*.[8] of 18.67%. Higher number of patients with tapering hairs was observed by Inui *et al*.[7] in 31.7%, and Shim *et al*.[8] in 40%.

Tapering hair is characterized by wider diameter in distal shaft and thinner proximal shaft. The tapering is due to lymphocytic inflammatory infiltrate affecting the hair bulb, producing a thinner hair shaft.[10]

There is a significant relationship between vellus hair and lower SALT score. This correlates with our finding that vellus hair was found in patients with lower SALT score. The study did not find any significant association between the other trichoscopic features of alopecia areata and SALT score. This is in contrast to other studies where they found positive correlation between tapering hairs and disease severity.[7,11]

A limitation of our study was that there was an unequal distribution of patients according to clinical types and SALT score. Similarly, sample size for comparison of certain variables (such as tapering hairs, grey hairs and coiled hairs) was comparatively small.

Conclusion

Yellow dots, black dots, broken hair, vellus hair and tapering hair, grey hair and coiled hair were frequent trichoscopic findings. There was a significant association between vellus hair and lower SALT score. This study did not find any significant association between other trichoscopic features of alopecia areata and clinical type or SALT score.

Trichoscopy can be a quick, easy and valuable tool in the diagnosis of alopecia. It can be a non-invasive alternative to skin biopsy in confusing cases of diffuse alopecia resembling telogen effluvium or androgenetic alopecia, as well as ,other causes of patchy hair loss such as tinea capitis, trichotillomania and cicatricial alopecia.

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