Trichoscopic findings and quality-of-life assessment in Egyptian patients with noncicatricial alopecia

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Background
Trichoscopy has become a routine technique in dermatology practice. It is a simple, rapid, and noninvasive technique that allows early diagnosis and management, especially, of hair disorders.

Aim
This study aimed to evaluate the role of trichoscopy in diagnosis of noncicatricial alopecia (alopecia areata, androgenic alopecia, and telogen effluvium), clinical severity, and assessment of quality of life (QoL) in these disorders.

Patients and methods
One hundred and fifty patients with noncicatricial alopecia were divided according to their clinical diagnosis into three groups: alopecia areata (55 patients), androgenic alopecia (35 patients), and telogen effluvium (60 patients). Patients were assessed by clinical diagnosis, trichoscopy, and the Arabic version of Dermatology Life Quality Index (DLQI). In alopecia areata, patients were assessed clinically by severity of alopecia tool (SALT) score.

Results
The study revealed that the three types of alopecia had very large effect on QoL in most of the patients measured by DLQI. In alopecia areata, SALT score was very effective tool to evaluate AA severity, which revealed mild to moderate degree of severity, and there was a positive significant correlation between DLQI and SALT score. Trichoscopic examination revealed yellow dots, black dots, broken hairs, exclamation marks, and short vellus hairs. In androgenic alopecia, hair diameter diversity greater than 20% was the most significant sign, and also there was presence of yellow dots and vellus hair but in number less than that in alopecia areata. Stress was the most common provocative factor in telogen effluvium.

Conclusion
The clinical and dermoscopic features were matched among diagnosis in the three types of noncicatricial alopecia (telogen effluvium, alopecia areata, and androgenic alopecia). The observed correlation between DLQI findings and the clinical severity of alopecia areata suggests that alopecia has a negative effect on a patient's QoL.

Keywords:
alopecia areata, androgenic alopecia and quality of life, dermoscopy, telogen effluvium

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Introduction

Hair loss is the most common complaint in dermatology clinics. Diagnosis is usually based on clinical examination, pull test, and potassium hydroxide (KOH) examination [1], but nowadays, trichoscopy (hair and scalp dermoscopy) is a novel, fast, and noninvasive diagnostic tool of hair disorders and monitoring of therapeutic efficacy as well [2,3].

Most common causes of hair loss in adults are alopecia areata, telogen effluvium, and androgenic alopecia. Trichoscopy has shown efficacy to assess and differentiate these cases [2]. Main trichoscopic features of alopecia areata are yellow dots, short vellus hair, black dots, broken hairs, and exclamation mark hairs [4].

Trichoscopy of androgenic alopecia is characterized with hair diameter variability, which reflects hair miniaturization, and increased ratio of vellus hairs to all hairs in androgen-dependent scalp regions [5].

Telogen effluvium is a common nonscarring form of hair loss. Trichoscopic examination revealed no characteristic criteria for telogen effluvium, apart from few yellow dots, and short, dark, regrowing hairs have been recognized [6].

Hair loss disorders usually affect individual's quality of life (QoL) negatively, with bad self-image and impairment of social life. QoL assessment tools

are essential not only to measure the disease impact on patient's life but also to evaluate the efficacy of treatment [7,8].

Clinicians usually depend on clinical scores, but patients evaluate themselves in a different manner. Self-image and patient satisfaction is a crucial step in treating hair disorders, which takes long time [9].

In the current study, we aimed to shed light on trichoscopic pattern in a group of Egyptian patients with noncicatricial alopecia (alopecia areata, androgenic alopecia, and telogen effluvium), to study the clinical severity of alopecia areata using Severity of Alopecia Tool (SALT) score, and to evaluate the QoL in noncicatricial alopecia patients.

Patients and methods

This study included 150 patients who presented with noncicatricial alopecia at Dermatology Outpatient Clinic in Assiut University Hospitals, Egypt, between April 2017 and January 2019. The study was approved by Ethics Committee in Faculty of Medicine, in accordance with the principles of the Declaration of Helsinki II. All study participants provided informed consent before participation in this study. Patients were excluded if they had other autoimmune or inflammatory disorders, a history of infection, allergic skin, and systemic diseases. The patients were subdivided into three groups according to their clinical diagnosis: group 1: alopecia areata, group 2: androgenic alopecia, and group 3: telogen effluvium.

An initial evaluation of patient age, sex, duration of alopecia, symptoms, medication, and lesion severity was performed. Patients were asked about site, course, duration of hair loss, possible exacerbating factors (stress, pregnancy or lactation, use of cosmetics), previous lines of treatment, previous investigations, concurrent medical problems, and family history of similar condition.

Local scalp examination for erythema, scaling, and affected area of hair loss whether it is localized or diffuse, in addition to skin, mucus membrane, and teeth examination was done. Further investigations are done to confirm diagnosis of telogen effluvium.

Severity of Alopecia Tool score evaluation of alopecia areata

The National Alopecia Areata Foundation working committee has devised SALT score to assess the severity of alopecia areata. The SALT score is computed by measuring the percentage of hair loss in each of four areas of the scalp (40% vertex, 18% right profile, 18% left profile, and 24% posterior) and adding the total to achieve a composite score [10].

S0 is no hair loss, S1 is 25% hair loss, S2 is 25–49% hair loss, S3 is 50–74% hair loss, and S4 is 75–99% hair loss.

Dermatology Life Quality Index assessment

QoL assessment was done using the Arabic Version of Dermatology Life Quality Index (DLQI). It is a 10-item questionnaire in which responses to questions ranged from very much, a lot, little, and not at all. The DLQI used 10 items regarding symptoms and feelings, daily activities, leisure, work and school, personal relationships, and treatment as dimensions of life. Each was scored on a 0–3 scale [11]. The total DLQI score equaled 0–30; higher scores showed greater effect on QoL [12]. This questionnaire was given to all participants before examination after explaining the purpose of the research.

Trichoscopic evaluation

Trichoscopic examination is carried out by using the dermalite II pro HR, which is a pocket epiluminescence microscopy provided with 25 mm x10 lens. A noncontact dermoscopy was used for better evolution of scalp lesions.

Statistical analysis

Data entry and analysis were conducted using SPSS version 19 (SPSS Inc., Chicago, Illinois, USA). χ^2-Test was used to compare qualitative variables (sex distribution). Student *t*-test was used to compare quantitative variables (age and DLQI). Pearson's correlation was used to explore the relationships between quantitative variables. Differences were statistically significant when *P* less than 0.05.

Results

A total of 150 patients were studied, with 55 in the alopecia areata group, 35 in the androgenic alopecia group, and 60 in the telogen effluvium group (Table 1).

Alopecia areata group

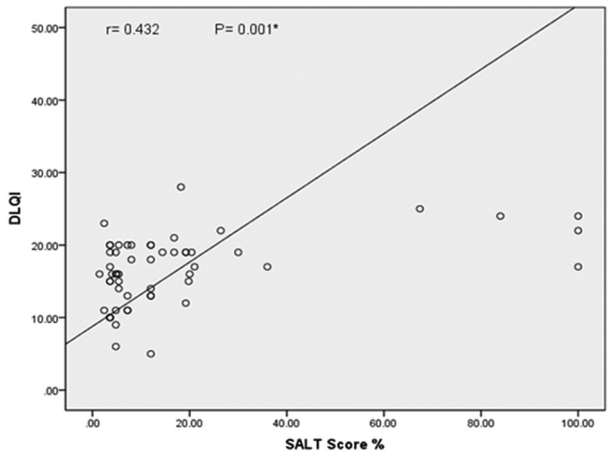
Mean ± SD age was 23.66 ± 8.01 years. There were 16 (29.1%) males and 39 (70.9%) females. We had 41 (74.5%) patients with alopecia areata, three (5.5%) patients with alopecia totalis, and 11 (20.0%) patients with ophiasis pattern. Mean ± SD value of DLQI was 16.62 ± 4.73. A total of eight patients had extremely

Table 1 Demographic data of the study

	Alopecia areata (*n*=55)	Androgenic alopecia (*n*=35)	Telogen effluvium (*n*=60)
Age (years)			
Mean±SD (range)*	23.66±8.01 (10.0-42.0)	33.37±9.56 (20.0-55.0)	27.80±10.05 (10.0-55.0)
Sex			
Male	16	20	7
Female	39	15	53
Provoking factors	Stress, associated with auto immune disease	Unknown factors	Stress, chemicals (dyes), use combined oral contraceptive, diet regimen, labor
Family history			
Positive	16	23	10
Negative	39	12	50
Duration of the disease (months)			
Mean±SD [median (range)]	18.29±27.95 [6.0 (1.0-144.0)]	5.23±5.14 [3 (2 months-20 years)]	1.88±2.34 [1.0 (1 month-12 years)]
History of medications	All of patients included in the research examined before using any treatment		

*Range: In alopecia areata (10.0 – 42.0), in androgenic alopecia (20.0 –55.0), in telogen effluvium (10.0 – 55.0)

Figure 1



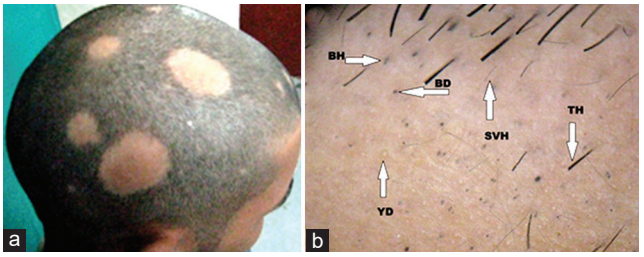
Correlation between total Dermatology Life Quality Index and Severity of Alopecia Tool score in alopecia areata group.

large effect, 41 patients had very large effect, five patients had moderate effect, and only one patient had small effect. SALT score assessment revealed 47 (85.5%) patients with grade S1, three (5.5%) patients with grade S2, one (1.8%) patient with grade S3, and four (7.3%) patients with grade S4. There were significant positive correlations between DLQI and SALT score (P = 0.001) (Fig. 1) and negative correlations between DLQI and age.

Regarding the correlations between domains of DLQI and disease duration and SALT score, a significant positive correlation was found between symptoms and feelings, personal relationships, leisure, total DLQI, and SALT score (Table 2).

Trichoscopic examination showed 53 (96.4%) patients were with yellow dots, 19 (34.5%) patients with white dots, 38 (69.1%) patients with black dots, 14 (25.5%) patients with exclamation marks, 21 (38.2%) patients with vellus hair, and 35 (63.6%) patients with broken hair (Figs. 2 and 3).

Figure 2



(a) A 22-year-old male patients with multiple patchy alopecia areata; (b) trichoscopic findings: (YD) yellow dots, (BD) black dots, (TH) tapering hair, (BH) broken hair, and (SVH) short vellus hair.

Androgenic alopecia group

The mean age for the patients in this group was 33.37 ± 9.65 years. DLQI values for patients were variable; 10 (28.6%) patients had extremely large effect, 21 (60%) patients had very large effect, two (5.7%) patients had moderate effect, and only two (5.7%) patients had small effect. There were significant negative correlations between age and both personal relationships and total DLQI in patients with AGA (P = 0.008 and 0.001, respectively). Moreover, negative correlations between duration and both leisure and total DLQI score were detected (Table 3).

Trichoscopic findings in all 35 (100%) patients of patients with AGA was hair shaft diversity greater than 20%, 30 (85.7%) patients had short vellus hair, 16 (45.7%) patients had peripilar sign, and yellow dots were presented in 11 (31.4%) patients (Fig. 4).

Telogen effluvium group

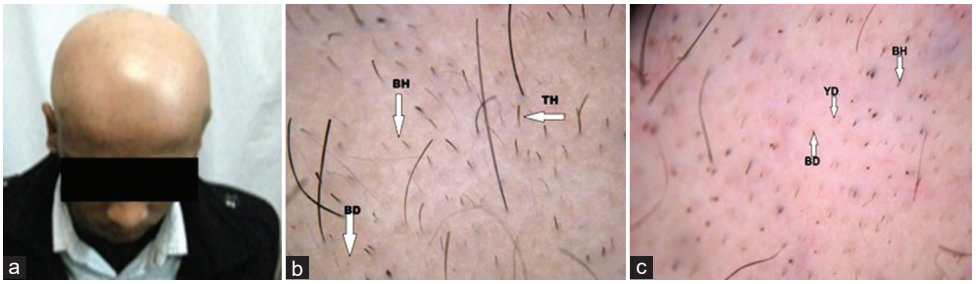
Mean age was 27.80 ± 10.05 years. Predisposing factors for patients with telogen effluvium are shown in Table 4. Mean DLQI value was 15.05 ± 4.44; 12 (20.0%) patients had moderate effect, 41 (68.3%) patients had very large effect, and seven (11.7%) patients extremely large effects. No significant correlation could be detected between both age and

Table 2 Correlations between Dermatology Life Quality Index and age, disease duration and Severity of Alopecia Tool score in alopecia areata group

	Age (years)		Duration of disease (years)		SALT score %	
	r	*P*	*r*	*P*	*r*	*P*
Symptoms and feelings	0.011	0.938	0.189	0.166	*0.435*	*0.001**
Personal relationships	0.024	0.863	0.188	0.170	*0.273*	*0.043**
Daily activities	−0.033	0.812	0.099	0.473	0.171	0.212
Leisure	−0.016	0.910	−0.172	0.211	*0.268*	*0.048**
Treatment	0.121	0.377	−0.022	0.876	0.096	0.484
Total	−0.006	0.965	0.049	0.724	0.432	*0.001*

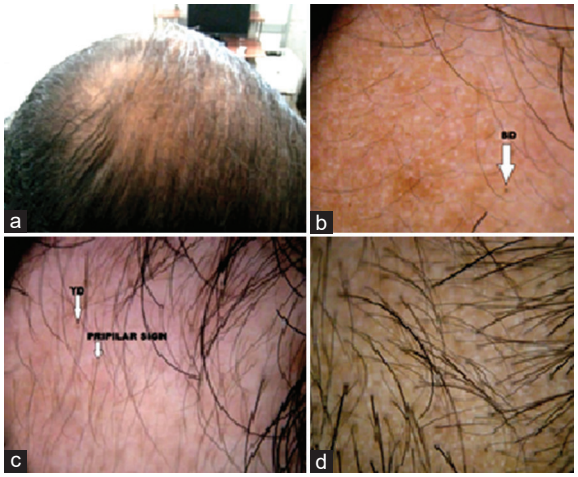
SALT, Severity of Alopecia Tool. *P* value < 0.05 and R value significant for correlation between data.

Figure 3



(a) An 18-year-old male patient with alopecia totalis; (b and c) trichoscopic findings: (YD) yellow dots, (BD) black dots, (TH) tapering hair, (BH) broken hair, and (SVH) short vellus hair.

Figure 4



(a) A 35-year-old male patient with androgenic alopecia; (b) hair diameter diversity greater than 20%, yellow dots and peripilar sign. (c and d) trichoscopic findings: hair diameter diversity greater than 20% and black dot.

duration of telogen effluvium and DLQI. Trichoscopic examination showed that 55 (91.7%) patients presented with predominance of follicular units with only one hair, nine (15%) patients with peripilar sign hair diameter, and 42 (70%) patients with upright regrowing hair (Fig. 5).

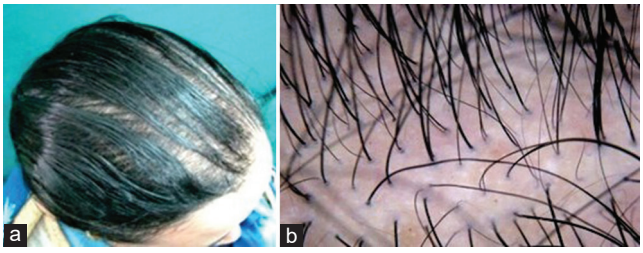
Discussion

Hair loss is a common complaint in dermatological practice. It has a great psychological effect on patient's self-esteem. Appropriate management of hair loss will not be completed unless different etiologies of hair loss have been identified.

In our study, SALT score was a very effective tool to evaluate alopecia areata severity. A significant positive correlation between SALT score and DLQI was found, which meant that increased severity of AA reflected impaired QOL. This is in agreement with other studies [13,14] which reported that severe cases of AA are associated with significant impairment of QoL. Trichoscopic evaluation revealed that yellow dots were the most diagnostic sign followed by short vellus hair, black dots, broken hairs, and exclamation marks. Tosti agreed with similar trichoscopic features as yellow dots were the most characteristic feature seen in over 95% of European patients [4]. On the contrary, it has been reported that trichoscopic signs for alopecia areata were found to be correlated with disease severity [15]. Bapu *et al.* [16], observed that the number of yellow dots per field of vision corresponded to the severity of alopecia areata in previous studies.

Among patients with androgenic alopecia, DLQI was largely affected in 60% of them, which is in accordance with Zhang and Zhang [14], who evaluated DLQI in patients with androgenic alopecia, and their findings indicated marked effect on individual's QoL. However, there was a negative correlation between age and personal relationships domain and total DLQI and also between disease duration and total DLQI; this might be explained by that patients were adapted to

Figure 5



(a) A 32-year-old female patient with telogen effluvium; (b) trichoscopic findings: predominance of follicular units with only one hair.

Table 3 Correlations between Dermatology Life Quality Index with age and disease duration in androgenic alopecia group

	Age (years)		Duration of disease (years)	
	r	*P*	*r*	*P*
Symptoms and feelings	0.071	0.684	0.083	0.634
Personal relationships	−0.443	*0.008**	−0.331	0.052
Daily activities	−0.249	0.149	−0.260	0.131
Leisure	−0.236	0.173	−0.357	*0.035**
Treatment	−0.193	0.267	−0.185	0.287
Total	−0.556	*0.001**	−0.555	*0.001**

Table 4 Dermatology Life Quality Index in relation to predisposing factors

	DLQI		*P*
	Mean	SD	
Stress			
Yes	13.46	4.71	0.014*
No	16.26	3.87	
Diet			
Yes	13.60	4.90	0.262
No	15.34	4.34	
Labor			
Yes	16.75	3.54	0.239
No	14.78	4.43	
Chemicals			
Yes	14.47	4.49	0.562
No	15.24	4.46	
Use COCs			
Yes	15.58	4.83	0.649
No	14.93	4.23	

COC, combined oral contraceptive; DLQI, Dermatology Life Quality Index.

the nature of the disease and modalities of treatment. Other studies reported the same negative burden of androgenic alopecia on patient's QoL [8,17].

Concerning trichoscopic features in androgenic alopecia, the most significant sign was hair diameter diversity greater than 20% in all patients with peripilar sign, short vellus hair, and yellow dots but in less percentage than in alopecia areata. This was in accordance with Tosti and Torres[3] who reported hair diameter diversity owing to miniaturization of hair follicles, which is a very diagnostic sign for androgenic alopecia.

The present study detected that stress was the most common precipitating factor for telogen effluvium, followed by the use of chemical agents, oral contraceptives, and diet. Moreover, DLQI was markedly impaired owing to excessive and diffuse shedding of hair in females, which is in agreement with Werner and Mulinari-Brenner [18].

In conclusion, the studied types of noncicatricial alopecia had marked effect on QoL using DLQI score, particularly alopecia areata cases. Trichoscopy improved the diagnostic accuracy of alopecia cases and became an integral part of hair examination. Yellow dots were most characteristic finding in alopecia areata; they were found also in androgenic alopecia but with less percentage. Hair shaft diameter diversity greater than 20% was a characteristic sign in androgenic alopecia, whereas predominance of follicular units with only one hair was the most characteristic sign in telogen effluvium, which was diagnosed by exclusion of other types of hair loss.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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