Portuguese Journal of Dermatology and Venereology

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Port J Dermatol and Venereol. **ORIGINAL ARTICLE**

Trichoscopy in alopecia areata and trichotillomania

Tricoscopia na alopecia areata e tricotilomania

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Abstract

Background: Alopecia areata (AA) and trichotillomania (TTM) belong to non-cicatricial alopecia. These disorders may have similar clinical features with different therapeutic protocols and prognoses. Trichoscopy has proved to be an office-based tool that helps in the diagnosis and differentiation of different types of alopecia. **Objective:** Our objective is to differentiate and diagnose AA and TTM based on trichoscopic features. **Methods:** The present cross-sectional and observational study was conducted on 86 patients presenting with complaints of hair loss in the outpatient department from January 2019 to September 2020. A scalp examination was done, followed by the dermatoscopic examination with a Dermlite DL4 dermatoscope. **Results:** The percentage of black dots was higher in AA as compared to TTM. Broken hair at equal lengths was observed in AA, whereas broken hair at varying lengths was seen in TTM. Coiled hair, V-sign, and flame hair were only seen in TTM. **Conclusion:** The combination of black dots, broken hair, and exclamation mark favored the diagnosis of AA. Hair breaking at varying lengths, the V sign, flame hair, and coiled hair were exclusively seen in TTM.

Keywords: Trichoscopy. Alopecia areata. Trichotillomania. Non-cicatricial alopecia.

Resumo

Introdução: Alopecia areata (AA) e trichotillomania (TTM) pertencem ao grupo das alopécias não cicatriciais. Esses distúrbios podem ter características clínicas semelhantes mas têm diferentes protocolos terapêuticos e prognóstico. A tricoscopia provou ser uma ferramenta de acesso fácil que ajuda no diagnóstico e diferenciação de AA e TTM. **Objetivo:** Nosso objetivo é diferenciar e diagnosticar AA e TTM com base em recursos tricoscópicos. **Métodos:** O presente estudo transversal e observacional foi realizado em 86 pacientes que apresentaram queixas de perda de cabelo no departamento ambulatorial de janeiro de 2019 a setembro de 2020. O exame objetivo do couro cabeludo foi seguido pelo exame dermatoscópico com um dermatoscópio Dermlite DL4. **Resultados:** A percentagem de pontos pretos foi maior na AA em comparação com o TTM. Cabelos quebrados em comprimentos iguais foram observados na AA, enquanto cabelos quebrados em comprimentos variados foram vistos em TTM. Cabelos enrolados, sinais em V e cabelos em chamas eram vistos apenas no TTM. **Conclusão:** A combinação de pontos pretos, cabelos quebrados e ponto de exclamação favoreceu o diagnóstico de AA. Cabelos quebrados em comprimentos variados, o sinal V, cabelos em chamas, e cabelos enrolados foram vistos exclusivamente no TTM. A diferença na percentagem de características dermatoscópicas especificas de cada doença é estatisticamente significativa.

Palavras-chave: Tricoscopia. Alopecia areata. Tricotilomania. Alopecia não cicatricial.

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Received: 23-06-2023
Accepted: 02-10-2023
DOI: 10.24875/PJDV.23000053

Available online: 20-12-2023
Port J Dermatol and Venereol. 2023;81(4):232-238
www.portuguesejournalofdermatology.com

Introduction

Alopecia areata (AA) and trichotillomania (TTM) are two common forms of non-scarring hair loss encountered in clinical practice. TTM is a compulsive disorder characterized by the irresistible urge to pull out hair leading to bizarre-shaped patches of hair loss[1]. AA is an autoimmune disorder that typically presents with sharply demarcated patches of hair loss. Since the treatment strategies and prognosis of these disorders are different, it is important to differentiate them using non-invasive methods such as dermatoscopy since scalp biopsy is not frequently accepted by the patients. Concerning the dermatoscopic features, not much work has been done on TTM compared to AA.

Methods

The present cross-sectional and observational study was conducted in the outpatient department of Dermatology, Venereology, and Leprosy in Sri Guru Ramdas Institute of Medical Sciences and Research, Sri Amritsar, between January 2019 and September 2020.

Only patients with the clinical diagnosis of AA or TTM were included. Any other scalp disease, such as androgenetic alopecia, seborrheic dermatitis, and tinea capitis, were excluded from our study. The diseased area of the scalp was examined, and the diagnosis of AA and TTM was made clinically. Well-demarcated patches of hair loss with hair broken at equal lengths favored the diagnosis of AA, whereas irregular patches of hair loss with hair broken at varying lengths favored the TTM diagnosis. TTM patients had a history of relief of stress with picking of hair, unlike AA patients. This macroscopic examination was followed by the dermatoscopic examination of the scalp with Dermlite DL4 dermatoscope to see the various hair follicle structures and hair shaft patterns. Informed consent was taken from each patient. Approval from the Institutional Ethics Committee was taken.

Results were tabulated and analyzed statistically using SPSS Software 19.0 version. Percentages and mean values were calculated wherever applicable. For establishing relation between AA and TTM, correlation coefficient (r) was calculated. Results were considered significant if value of probability 'p' < 0.05 and highly significant if 'p' < 0.01.

Results

We included 86 patients in the study, 76 patients with AA and 10 patients with TTM. Out of total patients, there were 40 males and 46 females. The mean age of presentation in the study was 30.6 years with a standard deviation of 14.52 years.

Trichoscopic features of AA

Among the 76 patients diagnosed with AA, the most common trichoscopic finding was black dots (Fig. 1) seen in 51 patients (67.1%), broken hair (Fig. 2) seen in 50 patients (65.7%), short vellus hair (Fig. 3) seen in 36 patients (47.3%), tapering hair (Fig. 4) in 27 patients (35.5%), yellow dots (Fig. 5) in 23 patients (30.2%), pigtail hair in 18 patients (23.6%), coudability hair (Fig. 6) in 16 patients (21.05%), tulip hair (Fig. 7) in 8 patients (10.5%), upright regrowing hair in 6 (7.89%) patients, and split ends (Fig. 8) in 4 (5.26%) patients (Table 1).

Trichoscopic features of TTM

Out of 10 patients in the TTM group, the most common trichoscopic features were broken hair at varying lengths (Fig. 9) seen in 10 patients (100%), black dots in 9 (90%) patients, upright regrowing hair, split ends, and coiled hair (Fig. 10) were seen in 7 (70%) patients each, V sign (Fig. 11) and flame hair (Fig. 12) in 4 (40%) patients each, tulip hair in 3 (30%) patients, and tapering hair in 1 (10%) patient (Table 2).

Comparing trichoscopic features in AA and TTM

Black dots were seen in 51 (67.1%) patients of AA and 9 (90%) patients of TTM. Broken hair was seen in 50 (65.7%) patients of AA and 10 (100%) patients of TTM. Tapering hair was seen in 27 (35.5%) patients of AA and 1 (10%) patient of TTM. Tulip hair was seen in 8 (10.5%) patients of AA and 3 (30%) patients of TTM. Split ends were seen in 4 (5.26%) patients of AA and 7 (70%) patients of TTM. Upright regrowing hair was seen in 6 (7.89%) patients of AA and 7 (70%) patients of TTM.

The difference between AA and TTM in the percentage of black dots, broken hair, tapering hair, tulip hair, split ends, and upright-growing hair was statistically significant (Table 3).

Discussion

AA is one of the most common forms of hair loss seen by dermatologists and accounts for 25% of all cases of alopecia[2]. In the general population, the prevalence was estimated at 0.1-0.2%, with a lifetime risk

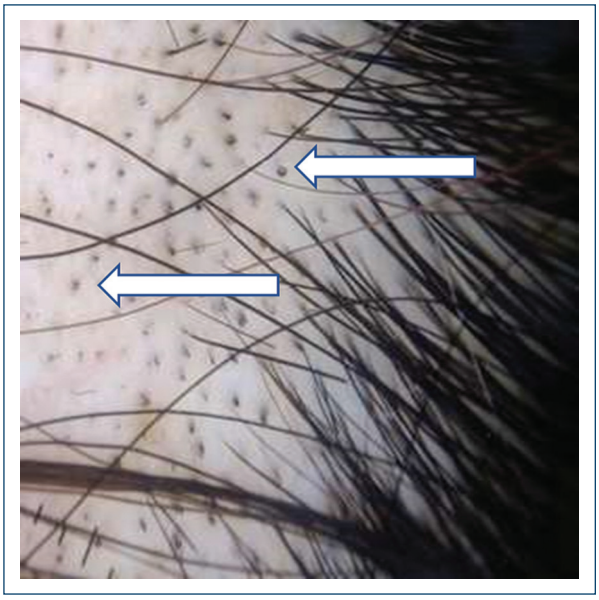

Figure 1. Black dots.

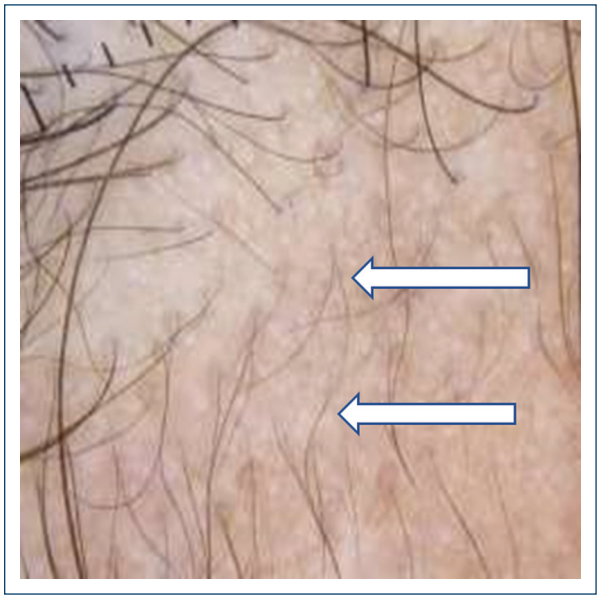

Figure 3. Short vellus hair.

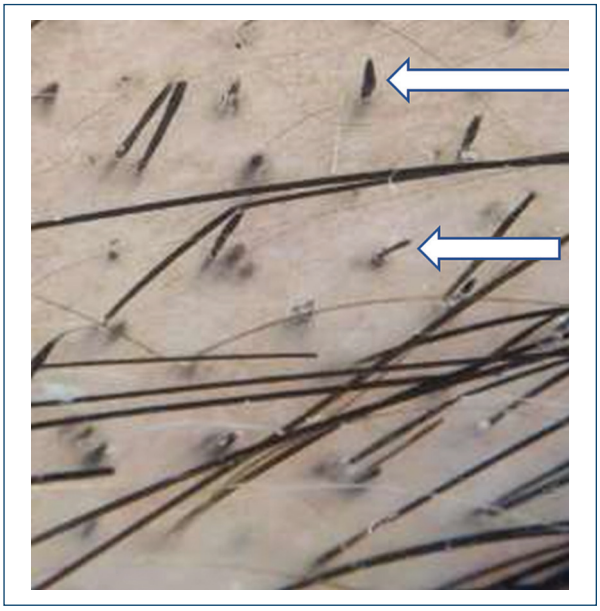

Figure 2. Broken hair.

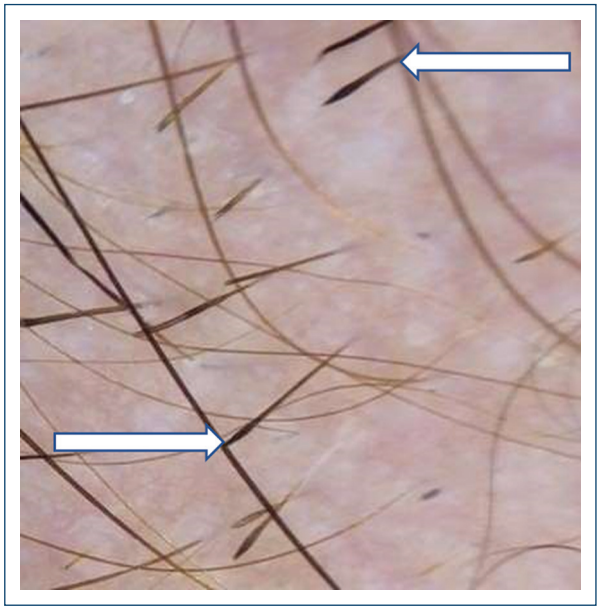

Figure 4. Showing Tapering hair.

of 1.7%[3]. It is characterized as a non-scarring form of hair loss involving the scalp and/or body without any clinical inflammatory signs. AA typically presents with well-defined, regular, circumscribed patches of hair loss with hair broken at equal length[4].

TTM is another form of non-scarring alopecia resembling AA. The disorder most commonly affects children between the age group of 9-13 years with female preponderance[1]. The scalp is the most common site, but it can also involve eyebrows, eyelashes, facial hair, axillary and pubic hair[5]. Clinically, patients present with irregular localized patches of hair loss with broken hairs of varying lengths, mainly in the frontoparietal area and the vertex[6].

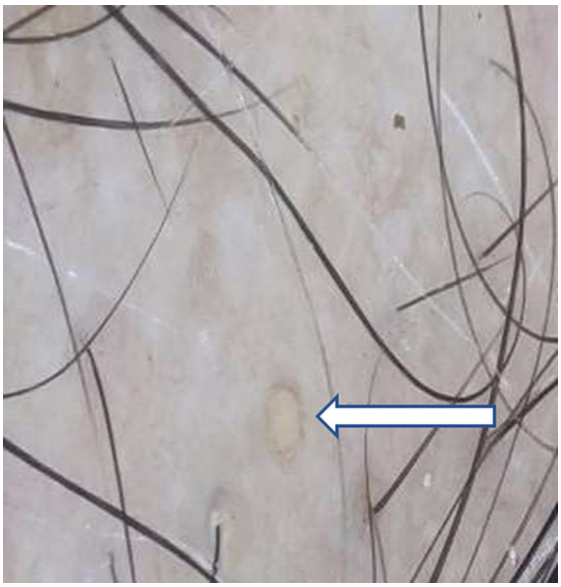

Figure 5. Yellow dots.

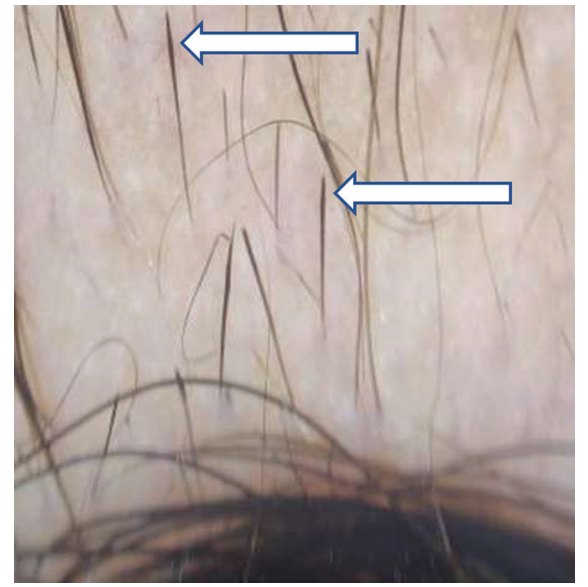

Figure 7. Tulip hair.

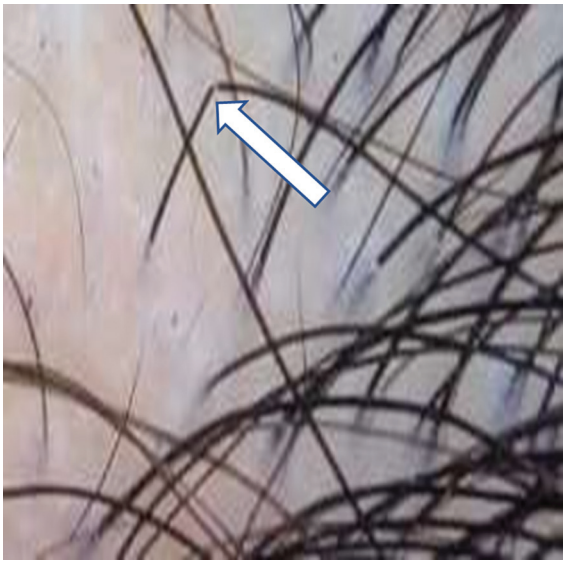

Figure 6. Coudability hair.

Figure 8. Trichoptilosis.

Diagnosis and treatment of these groups of disorders can be challenging. Even with careful clinical evaluation and proper history taking, the diagnosis can be missed. The diagnosis cannot be based per se on hair evaluation methods because of the variations in sensitivity and invasiveness of procedures, such as scalp biopsy, which are not frequently accepted by the patients[7]. So besides basic evaluation, it is important to have easy-to-use and non-invasive office tools such as dermatoscope that aid in performing the diagnosis and help to interpret the overlapping features of these hair disorders.

The diagnosis of AA cannot be made based on a single dermatoscopic feature but needs the combination of various dermatoscopic features. In our study, the combination of black dots, tapering hair, and broken hair was specific and diagnostic for AA. A similar trichoscopic

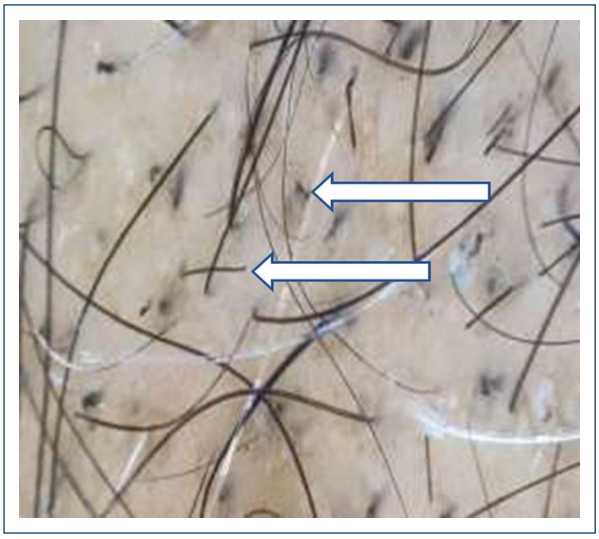

Figure 9. Broken hair at varying lengths.

Table 1. Trichoscopic features of alopecia areata (n = 76)

Trichoscopic features	No.	%
Black dots	51	67.11
Yellow dots	23	30.26
Tapering hair	27	35.53
Broken hair	50	65.79
Short vellus hair	36	47.37
Pigtail hair	18	23.68
Coudability hair	16	21.05
Tulip hair	8	10.52
Upright regrowing hair	6	7.89
Split ends	4	5.26

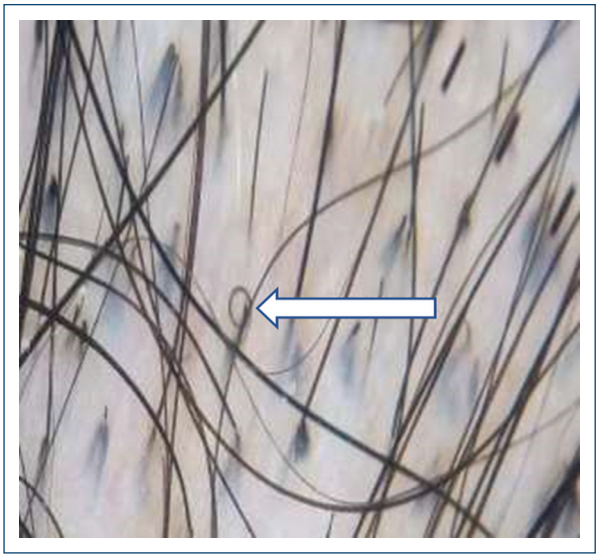

Figure 10. Coiled hair.

Table 2. Trichoscopic features of trichotillomania (n = 10)

Trichoscopic features	No.	%
Black dots	9	90.00
Tapering hair	1	10.00
Broken hair	10	100.00
Upright regrowing hair	7	70.00
Hair of varying lengths	10	100.00
Split ends	7	70.00
Coiled hair	7	70.00
Tulip hair	3	30.00
V sign	4	40.00
Flame hair	4	40.00

picture can also be seen in TTM with different characteristics of broken hair and black dots. Furthermore, we reported that the V sign, coiled hair, and flame hair are exclusively seen in TTM.

Tapering hair (aka exclamation mark hair) is considered to be pathognomonic of AA and a marker of the disease activity[8]. In our study, tapering hair was more frequently observed in not only in AA patients but also in TTM with a statistically significant difference. Rakowska et al. also observed a higher number of patients with exclamation mark hair in AA (81%) as compared to TTM (16%)[6]. Rakowska et al. also demonstrated the comparison of tapering hair seen in AA and TTM. The tapering hair in TTM has a flat distal end with a pigmented proximal end, whereas the tapering hair in AA has a frayed and uneven distal end with a hypopigmented proximal end[6].

We observed a statistically significant difference in the occurrence of black dots in patients of AA and TTM, with a higher number of black dots in AA patients, in agreement with the findings of Chiramel et al.[9], Rakowska et al. observed that black dots in AA are of

Table 3. Trichoscopic features of alopecia areata and trichotillomania

Trichoscopic features	Alopecia areata (n = 76)		Trichotillomania (n = 10)		r	p-value
	No.	% age	No.	% age		
Black dots	51	67.11	9	90	0.48	0.046*
Broken hair	50	65.9	10	100	0.37	0.044*
Tapering hair	27	35.53	1	10	0.43	0.034*
Tulip hair	8	10.52	3	30	0.42	0.035*
Split ends	4	5.26	7	70	1.00	0.000
Upright regrowing hair	6	7.89	7	70	1.00	0.000

*Significant at 0.05 level of significance.

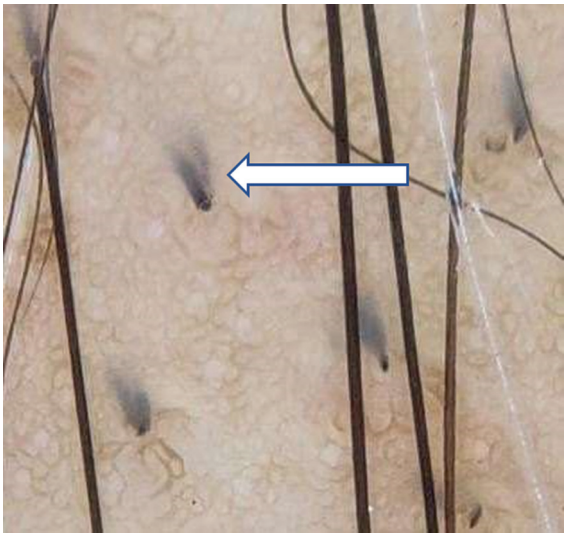

Figure 11. V sign.

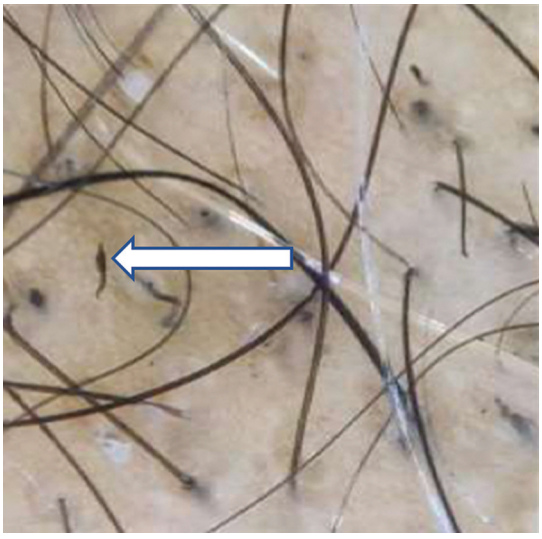

Figure 12. Flame hair.

uniform size and shape whereas in TTM, they are of variable diameter and shape[6].

Broken hair is formed due to the breakage of hair shafts at a different distance from the scalp surface. Ankad et al. in a study with 10 TTM patients observed broken hairs of varying lengths in 100% of patients[10], similar to our findings and to the study of Chiramel et al.[9]. Broken hair occurs both in AA and TTM, but in TTM, broken hairs typically have varying lengths[10].

In our study, we observed that patients with split ends, tulip hair, and upright regrowing hair were higher in TTM as compared to AA. This difference was statistically significant and similar to the findings of Rakowska et al.[6].

Upright regrowing hair is short hair with a tapered distal end and thickened proximal end[11]. We observed upright regrowing hair in 70% of patients of TTM, comparable to the study of Ankad et al. where upright regrowing hair was observed in 80% of patients[10].

Trichoptilosis refers to irregular hair with split ends. TTM is characterized by trichoptilosis affecting short hair[12]. Split ends were seen in 70% of TTM patients in our study, which was consistent with the findings of Chiramel et al.[9].

Flame hair, coiled hair, and V-sign were only seen in TTM in our study and thus were considered to be the specific features of TTM. Similar observations have been reported by Ankad et al.[10].

Flame hair refers to semi-transparent, wavy cone-shaped hair residues formed due to repetitive mechanical pulling of hair[11]. We reported flame hair in 40% of

TTM patients, findings comparable to Ankad et al. where flame hair was seen in 30% of patients[10]. Rakowska et al. and Govindarajaulu SM reported flame hair in a lower percentage, respectively, 25% and 20% of patients[6,8].

Coiled hair is formed as a result of hair shaft fracture and curling of the proximal part which remains attached to the scalp[13]. We observed coiled hair in 70% of patients of TTM which was comparable to the study of Ankad et al.[10].

V sign is formed when two or more hair emerges from a single follicular opening breaking at the same length above the scalp surface[11]. In our study, the V sign was seen in 40% of TTM patients, a percentage similar to Ankad et al. (30%)[10]. Nevertheless, other studies reported a higher incidence of V sign, namely Govindarajaulu et al. (100% of pati) and Chiramel et al. observed V sign in 80% of patients[8,9].

Trichoscopy has proved to be a reliable tool in the diagnosis of TTM by demonstrating distinctive dermatoscopic patterns and thus allows us to differentiate TTM from patchy AA[14]. Since TTM as a disease carries its social implications, early diagnosis and treatment are necessary. Dermatoscopy thus plays a vital role in the diagnosis of the disease and precludes the need for a scalp biopsy.

Conclusion

The early diagnosis using a dermatoscope helps in the timely management of non-scarring hair disorder and prevents the progression to cicatricial hair loss. Thus, the use of dermatoscopy in the clinical evaluation of these non-cicatricial alopecias enhances the diagnostic potential beyond the simple clinical examination. The combination of black dots, tapering hair, and broken hair is specific and diagnostic for AA. Broken hair at varying lengths, the V sign, coiled hair, and flame hair favors the diagnosis of TTM.

Funding

None.

Conflicts of interest

None.

Ethical disclosures

Protection of human and animal subjects. The authors declare that no experiments were performed on humans or animals for this study.

Confidentiality of data. The authors declare that they have followed the protocols of their work center on the publication of patient data.

Right to privacy and informed consent. The authors have obtained the written informed consent of the patients or subjects mentioned in the article. The corresponding author is in possession of this document.

Use of artificial intelligence for generating text. The authors declare that they have not used any type of generative artificial intelligence for the writing of this manuscript, nor for the creation of images, graphics, tables, or their corresponding captions.

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