Asian Journal of Research in Dermatological Science

4(2): 21-25, 2021; Article no.AJRDES.67762

Trichoscopy of Alopecia Areata: Analysis of 215 Cases

Emina Kasumagic-Halilovic[1*]

[1]Department of Dermatovenereology, University Clinical Center Sarajevo, Bosnia and Herzegovina.

Author's contribution

The sole author designed, analysed, interpreted and prepared the manuscript.

Article Information

Editor(s):
(1) Dr. Giuseppe Murdaca, University of Genova, Italy.
Reviewers:
(1) Eckart Haneke, Univ Berne, Switzerland.
(2) Adel Alsantali, King Fahd Armed Forces Hospital, Saudi Arabia.
Complete Peer review History: http://www.sdiarticle4.com/review-history/67762

Original Research Article

Received 18 February 2021
Accepted 22 April 2021
Published 28 April 2021

ABSTRACT

Background: Alopecia areata (AA) is i a common form of localized, nonscarring hair loss. It is characterized by loss of hair in patches, total loss of scalp hair (alopecia totalis), or total loss of scalp and body hair (alopecia universalis). The etiology of the disease is still unknown, although the evidence suggests that AA is an immunologically mediated disease.
Trichoscopy represents the dermoscopy imaging of the scalp and hair. Structures which may be visualized by trichoscopy include hair shafts, hair follicle openings, perifollicular epidermis and cutaneous microvessels. The aim of this prospective study was to identify the trichoscopic features of alopecia areata.
Methods: A total of 215 patients with clinically diagnosed AA were enrolled in this study. Data on age, gender, personal and family history, clinical pattern and duration of disease were collected and analyzed. Trichoscopic examination was performed using either videodermatoscope or handheld dermatoscope.
Results: The most common trichoscopic findings of alopecia areata were yellow dots seen in 169 (78.60%) patients, followed by black dots in 115 (53.49%) cases, exclamation mark hairs in 107 (49.77%) cases and tapered hairs in 99 (46.05%) patients. Short vellus hairs were observed in 91 (42.32%) patients. Trichoscopic results of AA were similar in all clinical types of the disease.
Conclusions: Our study has shown the significances of trichoscopy of patients with AA.

Keywords: Alopecia areata; hair; trichoscopy; videodermoscopy.

**Corresponding author: E-mail: eminakahalilovic@gmail.com;*

1. INTRODUCTION

Alopecia areata (AA) is a heterogeneous disease characterized by nonscarring hair loss on the scalp or other parts of the body. It affects 1-2% of the population of both genders and occurs in all age groups [1]. A wide range of clinical presentation can occur-from a single patch of hair loss, multiple patches, to complete loss of hair on the scalp (alopecia totalis) or the entire body (alopecia universalis). The etiology of the disease is still unknown, although the evidence suggests that AA is an immune-mediated disease.

Standard methods used to diagnose hair disorders are clinical inspection, pattern of hair loss, pull test, trichogram, biopsy and screening blood tests. They vary in sensitivity, reproducibility and invasiveness. Trichoscopy is very useful for *in vivo* diagnosis of scalp and hair disorders and can greatly improve clinical management [2]. Both handheld dermatoscope and videodermatoscope can be utilized. The basic principle of dermatoscopy is illumination of a lesion and studying it with high magnification to visualize subtle features. Structures which may be visualized by trichoscopy include hair shafts, hair follicle openings, perifollicular epidermis and cutaneous microvessels.

More recent studies have accumulated evidence that the use of trichoscopy in the clinical evaluation of hair disorders improves diagnostic capability beyond simple clinical inspection [3-6]. Therefore, the aim of this prospective study was to identify the trichoscopic features of alopecia areata.

2. MATERIALS AND METHODS

This prospective study was conducted in Department of Dermatovenerology, University Clinical Centre Sarajevo. It was a case series study. Institutional Ethical Committee clearance was obtained. After informed consent, relevant history was taken and clinical examination was performed. The following factors were considered: sex, age, personal and family history, clinical pattern and duration of disease.

The study included 215 patients with AA (93 female and 122 male). The diagnosis of AA was based on clinical examination. The various pattern of AA were noted as patchy, ophiasis, totalis and universalis. Trichoscopic examination was performed using either MoleMax II videodermatoscope or handheld dermatoscope DermLite II pro (3Gen, San Juan Capistrano, Ca USA). The centre and periphery of the alopecic patch were examined by trichoscopy.

Data collected were analyzed and tabulated in Microsoft excel sheet. The results are presented in proportions and percentages.

3. RESULTS

Among the 215 patients included in this study, 122 (56.74%) patients were men and 93 (43.26%) patients were women. The male /female ratio was 1:0.76. The average age of the patients was 26, varying from 11 to 65 years. The most common age group for AA in our study was seen in the 21-40 year age group. Family history was positive for AA in 19 of 215 (8.83%) patients. The duration of AA ranged from 1 to 61 months. Long disease duration was noted in patients with universal type of AA. Patchy alopecia was the most common type. In the scalp, common sites involved were parietal and occipital regions. The patients enrolled in our study had mostly type II Fitzpatrick's skin phenotype. The most common trichoscopic findings of alopecia areata were yellow dots seen in 169 (78.60%) patients, followed by black dots in 115 (53.49%) cases, exclamation mark hairs in 107 (49.77%) cases and tapered hairs in 99 (46.05%). Short vellus hairs were observed in 91 (42.32%) patients. Trichoscopic results of AA were similar in all clinical types of the disease (Table 1).

Table 1. Triscoscopic features seen in patients witch each type of alopecia areata

Type of AA (no of patients)	Yellow Dots (%)	Black dots (%)	Tapered hairs (%)	Short vellus (%)
Patchy localized (37)	26 (70.3)	21 (56.7)	20 (54)	17(45.9)
Patchy multiple (144)	118 (70)	78 (54.2)	79 (54.9)	59 (41)
Alopecia totalis (20)	14 (70)	10 (50)	-	9 (45)
Alopecia universalis (14)	11 (78.6)	6 (42.8)	-	6 (42.8)
Total AA patients (215)	169 (78.6)	115(3.5)	99 (46.5)	91 (42.3)

4. DISCUSSION

Trichoscopy corresponds to scalp and hair dermatoscopy and has been increasingly used as an aid in the diagnosis, follow-up, and prognosis of hair disorders. Trichoscopic evaluation of the scalp is based on the observation of follicular patterns, interfollicular patterns, hair shaft characteristics and vascular patterns. Today, trichoscopy is the most important tool for diagnosing alopecias and it almost completely substituted scalp biopsies.

The hallmark trichoscopic features of AA are regularly distributed yellow dots, broken hairs, micro-exclamation mark hairs, tapered hairs, black dots, and short vellus hairs [7,8]. Trichoscopic results of AA are similar in all clinical types of the disease; differences on trichoscopy depends on disease activity.

The term "dots" refers to the small, round follicle openings seen on trichoscopy. Trichoscopy may distinguish whether hair follicle openings are normal, empty, fibrotic or containing biological material, such as keratotic plugs or hair residues. Yellow dots are follicular infundibula with keratotic material or sebum. They vary in color, shape and size.

Yellow dots in AA are keratotic plugs that fill the follicular infundibula. A characteristic feature of yellow dots in AA is their relatively regular distribution. They are arranged in groups of two to three, reflecting the number of hair shaft per follicular unit. In various studies, yellow dots were observed in 96% [9], 94.8% [10] 81.8% [11], 63.7% [12] and 57.3% [13] of patients with AA. This disparity in findings can be explained by the difference in ethnic group enrolled in studies which implies variation in sebaceous gland activity as well as in the degree of pigmentation of the scalp in late stages. Yellow dots found in 169 (78.60%) of patients, in our study were seen in both early and advanced stages of AA. Yellow dots are highly sensitive but have low specificity for AA, as they may be seen in other hair disorders, including androgenetic alopecia and discoid lupus erythematosus [14,15].

Black dots, formerly also called "cadaverous hairs" are pigmented residues of hairs destroyed and broken at scalp level. They are slightly larger than the thickness of terminal hair shafts at the same location. Black dots are present in 36%-70% of patients with AA and are marker of active disease [16,12]. In our study, black dots are seen in 115 (53.5%) patients.

In alopecia areata, broken hairs may develop in two ways. One is transverse fracture of terminal hair shafts weakened by the inflammatory process. The other possibility is rapid regrowth of incompletely destroyed hair shafts that previously formed the black dots.

Exclamation mark hairs (EMH) are hairs that are thin at the proximal end and thicker at the distal end. They can be recognized with trichoscopy even when they are as short as 0.1 to 0.5 mm [17]. Morphologic analysis of hair follicles indicates that exclamation mark hairs in AA may result from a transient phase of cell degeneration among precortical keratinocytes and defective cortex differentiation [18]. EMH represent the most specific sign of acute AA [19]. In our study, exclamation hairs were observed in 107 (49.8%) patients. Previous studies have shown EMH raging from 30.9% to 75% [20,21].

Tapered hairs are very long micro-exclamation hairs. They are thick distally and become thinner at the proximal end. They are mainly present at the periphery of the lesions. The tapered hairs correspond to rapid catagen induction in AA. The narrowing of hair shafts toward the follicles is more readily perceived using trichoscopy than by naked eye. This category contains "coudability hairs", normal-looking hairs tapered at the proximal aspect, which were previously reported as another sign of AA [22]. Inui et al., demonstrated tapered hairs in 31.7% of alopecia cases [12]. In our study, tapered hairs were seen in 46.05%, (99 of 215 patients). Broken hairs, also considered to be similarly produced dystrophic hairs, are clinical markers of disease severity and activity of AA [12]. Other authors reported the incidence of broken hairs in 27.9% [16] and 55.4% [11].

Short vellus hair (shorter than 10 mm) is also a diagnostic feature of AA. The presence of multiple regrowing short vellus hairs may be a first, weak sign of disease remission. Vellus hairs may be straight or thin and twisted which are usually lost in a few weeks [23]. The high incidence of clustered vellus hairs in alopecia areata indicates the nondestructive nature of AA, allowing hair regrowth, whether or not is results in completely mature hair shaft [12]. In our study, short vellus hairs were observed in 42.32% of cases of AA. Trichoscopic results of AA were similar in all clinical types of the disease.

Recent data show that trichoscopy may also be applied in the evaluation of treatment response in AA patients [24].

5. CONCLUSION

Hair loss can have significant effects on patient's quality of life, and a prompt diagnosis of the different types of alopecias and an early intervention is needed. Trichoscopy represents a non-invasive technique for the evaluation of patients with hair loss that allows magnified visualization of the hair and scalp skin. Our study has shown the significances of trichoscopy of patients with alopecia areata.

CONSENT

As per international standard of university standard, patients' written consent has been collected and preserved by the author.

ETHICAL APPROVAL

The study design and protocols were reviewed and approved by Ethical Committee of University Clinical Center Sarajevo. This study was conducted in accordance with the guidelines of the Declaration of Helsinki, with the participant's right and safety taking precedence.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Safavi KH, Muller SA, Suman VJ, Moshel AN, Melton LJ. Incidence of alopecia areata in Olmsted Country, Minnesota, 1975 through 1989. Mayo Clin Proc. 1995; 70:628-633.
2. Tosti A, Torres F. Dermoscopy in the diagnosis of hair and scalp disorders. Actas Dermosifiliogr. 2009;100(1):114-119.
3. Mahur M, Acharya P. Trichoscopy of primary cicatrial alopecias: An updated review. J Eur Acad Dermatol Venereol. 2020;34(3):473-484.
4. Widaty S, Pusponegoro EH, Rahmayunita G, Astriningrum R, Akmad AM, Oktarina C, et al. Applicability of trichoscopy in scalp seborrheic dermatitis. Int J Trichology. 2019;11(2):43-48.
5. Waskiel-Burnat A, Rakowska A, Sikora M, Ciechanowicz P, Olzewska M, Rudnicka L. Trichoscopy of tinea capitis: A systematic review. Dermatol Ther (Heidelb). 2020; 10(1):43-52.
6. Galliker NA, Trueb RM. Value of trichoscopy versus trichogram for diagnosis of female androgenetic alopecia. Int J Trichology. 2012;4(1):19-22.
7. Rudnicka L, Olszewska M, Rakowska A, Slowinska M. Trichoscopy update 2011. J Dermatol Case Rep. 2011;5(4):82-88.
8. Inui S. Trichoscopy for common hair loss diseases: Algorhitmic method for diagnosis. J Dermatol. 2011;38(1):71-75.
9. Waskiel-Burnat A, Rakowska A, Sikora M, Olzewska M, Rudnicka L. Trichoscopy of alopecia areata in children. A retrospective comparative analysis of 50 children and 50 adults. Pediatr Dermatol. 2019;36(5):640-645.
10. Ross EK, Vincenzi C, Tosti A. Videodermoscopy in the evaluation of hair and scalp disorders. J Am Acad Dermatol. 2006;55(5):799-806.
11. Mane M, Nath AK, Thappa DM. Utility of dermoscopy in alopecia areata. Indian J Dermatol. 2011;56(4):407-411.
12. Inui S, Nakajima T, Nakagawa K, Itami S. Clinical significance of dermoscopy in alopecia areata: Analysis of 300 cases. Int J Dermatol. 2008;47:688-693.
13. Hegde SP, Naveen KN, Athanikar SP, Rehsme P. Clinical and dermoscopic pattern of alopecia areata: A tertiary care centre experience. Int J Trichol. 2013;5: 132-136.
14. Miteva M, Tosti A. Hair and scalp dermatoscopy. J Am Acad Dermatol. 2012; 67:1040-1048.
15. Kibar M, Aktan S, Bilgin M. Scalp dermatoscopic findings in androgenetic alopecia and their relations with disease severity. Ann Dermatol. 2014;26(4):478-484.
16. Varma K, Kumar U, Kataria M. Trichoscopic findings in alopecia areata- A cross sectional study. IP Indian J Clin Exp Dermatol. 2020;6(2):160-162.
17. Rudnicka L, Rakowska A, Kerzeja M, Olzewska M. Hair shafts in trichoscopy: Clues for diagnosis of hair and scalp diseases. Dermatol Clin. 2013;31:695-708.

18. Tobin DJ. Morphological analysis of hair follicle in alopecia areata. Microsc Res Tech. 1997;38(4):443-451.
19. Miteva M, Toasti A. Dermatoscopy of hair shaft disorders. J Am Academ Dermatol. 2013;68:473-481.
20. Mahmoudi H, Salehi M, Moghadas S, Ghandi N, Teimourpour A, Daneshapazhooh M. Dermoscopic findings in 126 patients with alopecia areata: A cross sectional study. Int J Trichology. 2018;10(3):118-123.
21. Vora RV, Pilani AP, Kota RKS, Singhal RR, Patel TM, Bhavsar ND. Trichoscopic findings in various scalp alopecias. JDA Indian Journal of Clinical Dermatology. 2019;2(1):7-13.
22. Shuster S. "Coudability": A new physical sign of alopecia areata. Br J Dermatol. 1984;11:629.
23. Lacarruba F, Dall'Oglio F, Rita Nasca M, Micali G. Videodermatoscopy enhances diagnostic capability in some forms of hair loss. Am J Clin Dermatol. 2004;5:205-208.
24. Fawzy MM, Hay RA, Mohammed FN, Sayed KS, Ghanem M, Ezzat M. Trichoscopy as an evaluation method for alopecia areata treatment: A comparative study. J Cosmet Dermatol; 2020.

Peer-review history:
The peer review history for this paper can be accessed here:
http://www.sdiarticle4.com/review-history/67762