International Journal of Life Sciences, Biotechnology and Pharma Research Vol. 13, No. 6, June 2024 Online ISSN: 2250-3137
Print ISSN: 2977-0122

DOI: 10.69605/ijlbpr_13.6.2024.101

ORIGINAL RESEARCH

A study of trichoscopic findings in non-scarring alopecia of scalp

[1]Dr. Ankit Parashar, [2]Dr. Rahul Parashar, [3]Dr. Sneha Singh, [4]Dr. Rajendra Devanda, [5]Dr. Akanksha Raj Khandal

[1]Junior Resident, [3]Senior Resident, [4]Assistant Professor, Department of Dermatology & Venereology, National Institute of Medical Sciences, Jaipur, Rajasthan, India
[2]Senior Resident, Department of Endocrinology, National Institute of Medical Sciences, Jaipur, Rajasthan, India
[5]Senior Resident, Department of Pathology, National Institute of Medical Sciences, Jaipur, Rajasthan, India

Corresponding author
Dr. Rajendra Devanda
Assistant Professor, Department of Dermatology & Venereology, National Institute of Medical Sciences, Jaipur, Rajasthan, India

Received date: 24 April, 2024 Acceptance date: 27 May, 2024

ABSTRACT

Aim: The aim of the present study was to assess the trichoscopic findings in non-scarring alopecia of the scalp in correlation with clinical signs and symptoms in adult population in a tertiary care. **Methods:** The present study was done in the Department of Dermatology, Venereology and Leprosy at National Institute of Medical Sciences and Research, Jaipur over a period of 18 months from January 2016 to June 2017. 200 patients were included in the study. Patient confidentiality was maintained and informed consent was taken as per annexure. **Results:** A total of 200 patients of non-cicatricial alopecia were recruited. Out of which, 80(40%) cases were of androgenetic alopecia, 60(30%) cases of alopecia areata and 60(30%) cases of telogen effluvium.Out of 200 patients, 127 (63.5%) patients were male and 73(36.5%) patients were female with a mean age at presentation of male and female being 29.47 ± 7.15 years and 30.76± 7.59 years respectively.Out of total 200 cases, maximum numbers of patients were of the age group of 26-35 years, 102 (51%); while 59 (29.5) patients were grouped in the age of 16-25 years and 39 (19.5%) cases were included under the group of more than 36 years of age. **Conclusion:** We concluded that trichoscopy is an effective non-invasive tool with vast opportunity in dermatological practice. Trichoscopy has proven to be a useful aid to differentiate between different types of alopecia, thus providing both clinician and patient a better alternative to invasive skin biopsy.

Keywords: trichoscopic findings, non-scarring alopecia, scalp, clinical signs and symptoms

INTRODUCTION

Alopecia areata is a common non-scarring dermatological condition that can affect the scalp and other hair-bearing sites of the body.[1] It is postulated to be a hair-specific autoimmune disease with genetic factors involved in disease susceptibility and severity.[2] Alopecia areata may present as single or multiple patches, ophiasis, alopecia totalis, alopecia universalis, sisaipho, alopecia inversus, or uncommonly as diffuse and reticular patterns. Nail changes such as nail pitting, trachyonychia, longitudinal ridging, and nail thinning may be associated in 10%–66% of cases.[3] A circumscribed area of hair loss with intact follicular ostia devoid of any scarring or atrophy can be clinically diagnosed as a case of alopecia areata.

In cases of diagnostic difficulty, confirmation is sought through histopathology, which may be difficult to perform in children and at times are unacceptable to those having facial lesions. However, in recent times, the invasive nature of biopsy has given way to the more popular non-invasive technique of trichoscopy, which allows subtle changes in the skin surface and subsurface to be viewed using its magnifying lenses. Yellow dots, black dots, tapering hair, short vellus hair, and circle hair are some of the consistent findings in alopecia areata.[4-8]

Alopecia areata and trichotillomania are common causes of non-scarring alopecia. AA is considered to be a chronic inflammatory disease with severity ranging from patchy hair loss to generalized loss of hair. Its worldwide lifetime incidence is around 2%.[9] In India, the reported incidence ranges from 0.7% to 3.8% in various studies.[10] The presentation ranges from patchy alopecia to very severe alopecia universalis. TTM is a form of traumatic alopecia in which there is an irresistible urge to pull one's own hair, leaving bizarre areas of hair loss. Its worldwide lifetime prevalence is 0.6%.[11] The patient's presentation ranges from small patchy alopecia to

DOI: 10.69605/ijlbpr_13.6.2024.101

more severe tonsure pattern (also known as Friar tuck sign).[12] TTM, which was earlier considered as an impulse-control disorder, is now being considered in obsessive–compulsive-related disorder (OCRD) in the International Classification of Diseases (ICD-11) and Diagnostic and Statistical Manual of Mental Disorders (DSM-III). Similar disorders include trichotemnomania in which the patient has a compulsion of cutting hair, which may lead to alopecia, and trichoteiromania in which the patient rubs their hairs to produce patchy hair loss. In our study, we found one case of trichoteiromania.

The aim of the present study was to assess the trichoscopic findings in non-scarring alopecia of the scalp in correlation with clinical signs and symptoms in adult population in a tertiary care.

MATERIALS AND METHODS

The present study was done in the Department of Dermatology, Venereology and Leprosy at National Institute of Medical Sciences and Research, Jaipur over a period of 18 months from January 2016 to June 2017. 200 patients were included in the study. Patient confidentiality was maintained and informed consent was taken as per annexure.

Study Population: Patients of age group 18-65 years with non-scarring alopecia of scalp reporting to our outdoor at National Institute of Medical Sciences and Research, Jaipur were included in the study.

Inclusion Criteria:

- Age group: 18-65 years, both men and women.
- Patients complaining of hair loss and /or visibility of scalp either diffuse or patchy.

Exclusion Criteria:

- Those patients already on treatment for the above conditions were excluded from this study.
- Scarring alopecia patients were excluded from the study by history and clinical examination.

After enrolling the patient in the study, a detailed history related to hair loss was taken in each patient in addition to history of medical illness. General physical examination and detailed dermatological examination of alopecia was done in each patient including the hair pull test. Based on the history and examination, a clinical diagnosis of the type of alopecia was made. These details were entered in the specified proforma. Each enrolled patient was subsequently subjected to trichoscopy.

Procedure of Trichoscopy

A trichoscope with a light emitting diode (LED) light and connected to the laptop or computer hard disk drive with a Universal serial bus (USB) cable through which trichoscopic pictures were recorded. Calibration was done on the laptop with the use of software pre-installed on the CD-drive along with instrument on a millimeter scale. Examination with a trichoscope was done following consent. The clicked pictures from the trichoscope were analyzed for findings and documented on proforma of each case.

STATISTICAL ANALYSIS

All statistical analysis was performed using SPSS version 13 for Windows. Descriptive statistics (n, minimum, maximum, mean, median, mode, standard deviation) outlined the variables used within the study. IQR= Interquartile Range (i.e. 75th Percentile-25th Percentile). Every analysis was performed on observed data. A cross tabulation with Pearson chi square test was used to measure differences in two categorical variables between two groups. If expected frequency is at least one cell of cross tabulation, then would be less than 5. The Fischer's exact test was used instead of Pearson chi square test to assess similarity between two groups. Column data was pooled and Chi-Square Test was reapplied in some tables instead of Fischer's exact test. Similarly, t-test was used to measure differences between continuous variables. Analysis of variance is used to test the equality of means for continuous variables between more than two groups. A p – value of 0.05 was considered significant.

RESULTS

Table 1: Distribution of Cases among the Conditions

Conditions	No.	Percentage (%)
Alopecia Areata	60	30
Androgenetic Alopecia	80	40
Telogen Effluvium	60	30
Total	**200**	**100**

A total of 200 patients of non-cicatricial alopecia were recruited. Out of which, 80(40%) cases were of androgenetic alopecia, 60(30%) cases of alopecia areata and 60(30%) cases of telogen effluvium.

Table 2: Association of age with sex

	N	Mean Age	Std. Deviation	P value
Male	127	29.47	7.15	0.23
Female	73	30.76	7.59	
Total	**200**	**29.94**	**7.32**	

DOI: 10.69605/ijlbpr_13.6.2024.101

Out of 200 patients, 127 (63.5%) patients were male and 73(36.5%) patients were female with a mean age at presentation of male and female being 29.47 ± 7.15 years and 30.76± 7.59 years respectively.

Table 3: Age (years) Distribution Among the Cases- Alopecia Areata, Androgenetic Alopecia and Telogen Effluvium

Conditions	Age (years)						Total	
	16-25 years		26-35 years		> 36 years			
	N	%	N	%	N	%	N	%
Alopecia Areata	20	33.3	18	30	22	36.7	60	100
Androgenetic Alopecia	19	23.8	60	75	1	1.3	80	100
Telogen Effluvium	20	33.3	24	40	16	26.7	60	100
Total	**59**	**29.5**	**102**	**51**	**39**	**19.5**	**200**	**100**

Out of total 200 cases, maximum numbers of patients were of the age group of 26-35 years, 102 (51%); while 59 (29.5) patients were grouped in the age of 16-25 years and 39 (19.5%) cases were included under the group of more than 36 years of age. In the Alopecia areata (N=60) group, maximum number of patients were in the age group of more than 36 years of age (22, 36.7%) while in androgenetic alopecia (N=80) and telogen effluvium (N=60), maximum number of patients were in the age group of 26-35 years of age that is 60 (75%) and 24 (40%) respectively. This distribution was statistically significant (p<0.001).

Table 4: Comparison of Mean Age (years) Among Alopecia Areata, Androgenetic Alopecia and Telogen Effluvium

Conditions	N	Mean age	SD	Minimum	Maximum	F	P value
Alopecia Areata	60	31.35	9.18	16.00	45.00	2.41	0.09
Androgenetic Alopecia	80	28.66	4.17	21.00	45.00		
Telogen Effluvium	60	30.25	8.31	16.00	48.00		
Total	**200**	**29.94**	**7.32**	**16.00**	**48.00**		

In Alopecia areata (N= 60), mean age at presentation was 31.35 ± 9.18 years. In androgenetic alopecia (N=80), mean age at presentation was 28.66 ± 4.17 years while in telogen effluvium (N=60), mean age at presentation was 30.25 ± 8.31years. Out of 200 cases, mean age at presentation was 29.94±7.32 years.

Table 5: Association of Sex Among Alopecia Areata, Androgenetic Alopecia and Telogen Effluvium

Conditions	Gender				Total	
	Female		Male			
	N	%	N	%	N	%
Alopecia Areata	19	31.7	41	68.3	60	100
Androgenetic Alopecia	27	33.8	53	66.3	80	100
Telogen Effluvium	27	45	33	55	60	100
Total	**73**	**36.5**	**127**	**63.5**	**200**	**100**

Out of 200 total cases, 127 (63.5%) were male while 73 (36.5%) were females. In Alopecia areata (n=60) group, 41 (68.3%) cases were male and 19 (31.7%) cases were females. Among androgenetic alopecia (n=80) group, 53(66.3%) cases were males and 27 (33.8%) cases were females. In telogen effluvium (n=60) group, 33 (55%) cases were males and 27 (45%) cases were females.

Table 6: Association of Type of Onset Among Alopecia Areata, Androgenetic Alopecia and Telogen Effluvium

Conditions	Onset				Total	
	Acute		Gradual			
	N	%	N	%	N	%
Alopecia Areata	44	73.3	16	26.7	60	100
Androgenetic Alopecia	0	0	80	100	80	100
Telogen Effluvium	40	66.7	20	33.3	60	100
Total	**84**	**42**	**116**	**58**	**200**	**100**

In Alopecia areata (n=60) cases, onset was acute in 44(73.3%) cases and gradual in 16(26.7%) cases. Among androgenetic alopecia (n=80) cases, onset was found to be gradual in 80(100%) cases while in telogen effluvium (n=60), onset was acute in 40(66.7%) cases and gradual in 20(33.3%) cases. Among all three groups there was statistically significant difference between acute and gradual onset. (p<0.001).

DOI: 10.69605/ijlbpr_13.6.2024.101

DISCUSSION

Hair is a versatile structure, and its importance has been related to the enhancement of beauty in human beings since age, particularly scalp hair. Hair fall is a common complaint encountered by dermatologists in their daily practice.[13] Hair is an important part of an individual's physical appearance. Hair loss can severely affect quality of life. Men and women with noticeable hair loss are perceived as less attractive and older than their non-bald counterparts.[14]To improvise on diagnosis techniques and management of hair loss diseases, various new techniques have been tried.[15] Among male androgenetic alopecia (AGA) patients, characteristic pattern of hair loss is easily noticeable but in females with initial stages of androgenetic alopecia where hair loss is reported but alopecia is not visible; effects of treatment are hard to measure. This leads to need for a tool to observe hair loss and treatment response.

In the present study, 200 patients (127 male and 73 female) of alopecia areata, androgenetic alopecia and telogen effluvium were included. Mean age at presentation was 29.94 years (range: 16-48 years). In a study by Köse ÖKet al (2012)[16], 144 (64 male and 80 female) cases of alopecia areata, androgenetic alopecia and telogen effluvium were included and mean age at presentation of 36.7 years.In our study, 60 cases of alopecia areata (41 male and 19 female) were included with a mean age at presentation of 31.35 years (range: 16-45 years). Alopecia areata (n=60) was found to be maximum (37.7%) among the age group 36 years or more. Lacarrubba F et al (2004)[17] recruited 200 (90 male and 110 female) cases of alopecia areata with a mean age at presentation of 24 years (range: 7-64 years).

In the present study mean duration of illness among alopecia areata (n=60) cases was 6.2 months. However, in a study by Mane M et al (2011)[18]on 66 patients of alopecia areata, mean duration of illness was found to be 10.3 months which was higher than present study. Though similar study conducted by Chiramel J M et al (2016)[19]found mean duration of illness in alopecia areata (n= 24) cases was 3 months which was lower than present study. In our study mean duration of illness among androgenetic alopecia (n=80) cases was 26.7 months. However, in a similar study conducted by Chiramel J M et al (2016)[19] found mean duration of illness among androgenetic alopecia (n=31) cases to be 30 months.

Yellow dots manifests as round or polycystic dots with uniform color ranging from yellow to yellow-pink.[20] Inside follicular infundibulum there is accumulation of sebum and keratin, which results in very small, point millimeter sized yellow dots.35 Positive yellow dots were recorded in a total of 110 (55%) patients of alopecia areata, androgenetic alopecia and telogen effluvium, thus being the most common trichoscopic findings in the present study. In a study done by Ross K E et al (2006)[20], yellow dots were seen in 60 (46.5%) cases among all three groups.Pigmented hairs before emerging out of scalp, break at the scalp level which leads to occurrence of black dots.[21]In our study black dots were seen in 39 (19.5%) cases of alopecia areata, androgenetic alopecia and telogen effluvium. This was similar to study by Köse ÖKet al (2012)[16] that showed 32 (22.2%) cases among all three groups. However, study by Chiramel J M et al (2016)[19]reported 19 (29.2%) cases where black dots were seen among all three groups.Diagnosis of Telogen effluvium is by exclusion of typical findings of alopecia areata and androgenetic alopecia. Therefore, in the absence of characteristic trichoscopic findings of alopecia areata and androgenetic alopecia, trichoscopy can still help in diagnosing telogen effluvium.

CONCLUSION

We concluded that trichoscopy is an effective non-invasive tool with vast opportunity in dermatological practice. Trichoscopy has proven to be a useful aid to differentiate between different types of alopecia, thus providing both clinician and patient a better alternative to invasive skin biopsy.

REFERENCES

1. Norris D. Alopecia areata: current state of knowledge. J Am Acad Dermatol. 2004 Jul;51(1 Suppl):S16-7.
2. Martinez-Mir A, Zlotogorski A, Ott J, Gordon D, Christiano AM. Genetic linkage studies in alopecia areata. J Investig Dermatol Symp Proc. 2003 Oct;8(2):199-203.
3. Kossard S, Zagarella S. Spotted cicatricial alopecia in dark skin. A dermoscopic clue to fibrous tracts. Australas J Dermatol. 1993;34(2):49-51.
4. Mane M, Nath AK, Thappa DM. Utility of dermoscopy in alopecia areata. Indian J Dermatol. 2011 Jul;56(4):407-11.
5. Kowalska-Oledzka E, Slowinska M, Rakowska A. Sensitivity and specificity of the trichoscopy. Indian J Dermatol Venereol Leprol. 2012 Sep-Oct;78(5):636-7.
6. Rudnicka L, Olszewska M, Rakowska A, Slowinska M. Trichoscopy update 2011. J Dermatol Case Rep. 2011 Dec 12;5(4):82-8.
7. Torres F, Tosti A. Trichoscopy: an update. G Ital Dermatol Venereol. 2014 Feb;149(1):83-91.
8. Inui S. Trichoscopy for common hair loss diseases: algorithmic method for diagnosis. J Dermatol. 2011 Jan;38(1):71-5.
9. Villasante Fricke AC, Miteva M. Epidemiology and burden of alopecia areata: a systematic review. Clin Cosmet Investig Dermatol. 2015 Jul 24;8:397-403.
10. Sharma VK, Dawn G, Kumar B. Profile of alopecia areata in Northern India. Int J Dermatol. 1996 Jan;35(1):22-7.
11. Christenson GA, Pyle RL, Mitchell JE. Estimated lifetime prevalence of trichotillomania in college students. J Clin Psychiatry. 1991 Oct;52(10):415-7.
12. Dimino-Emme L, Camisa C. Trichotillomania associated with the "Friar Tuck sign" and nail-biting. Cutis. 1991 Feb;47(2):107-10.
13. Brandt E, Verdonschot N, Van Vugt A, Van Kampen A. Biomechanical analysis of the sliding hip screw, cannulated screws and Targon® FN in intracapsular

DOI: 10.69605/ijlbpr_13.6.2024.101

hip fractures in cadaver femora. Injury. 2011 Feb 1;42(2):183-7.
14. Van Neste D. Female patients complaining about hair loss: documentation of defective scalp hair dynamics with contrast-enhanced phototrichogram. Skin Research and Technology. 2006 May;12(2):83-8.
15. Kossard S, Zagarella S. Spotted cicatricial alopecia in dark skin: a dermoscopic clue to fibrous tracts. Australasian journal of dermatology. 1993 Aug;34(2):49-51.
16. Köse ÖK, Güleç AT. Clinical evaluation of alopecias using a handheld dermatoscope. Journal of the American Academy of Dermatology. 2012 Aug 1;67(2):206-14.
17. Lacarrubba F, Dall'Oglio F, Nasca MR, Micali G. Videodermatoscopy enhances diagnostic capability in some forms of hair loss. American journal of clinical dermatology. 2004 Jun;5:205-8.
18. Mane M, Nath AK, Thappa DM. Utility of dermoscopy in alopecia areata. Indian Journal of Dermatology. 2011 Jul 1;56(4):407-11.
19. Chiramel MJ, Sharma VK, Khandpur S, Sreenivas V. Relevance of trichoscopy in the differential diagnosis of alopecia: a cross-sectional study from North India. Indian Journal of Dermatology, Venereology and Leprology. 2016 Nov 1;82:651.
20. Ross EK, Vincenzi C, Tosti A. Videodermoscopy in the evaluation of hair and scalp disorders. Journal of the American Academy of Dermatology. 2006 Nov 1;55(5):799-806.
21. Inui S, Nakajima T, Nakagawa K, Itami S. Clinical significance of dermoscopy in alopecia areata: analysis of 300 cases. International journal of dermatology. 2008 Jul;47(7):688-93.