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Comparison of Trichoscopic Features of Alopecia Areata before and after Treatment with Intralesional Steroids

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ABSTRACT

Alopecia Areata is a common form of non-scarring hair loss. The utility of Trichoscopy lies in diagnosis and monitoring therapeutic response in challenging cases. **Objectives:** To compare the change in frequency of trichoscopic features of Alopecia Areata before and after treatment with intralesional steroids. **Methods:** This descriptive longitudinal study was carried out in the Department of Dermatology, Sahiwal Teaching Hospital, Sahiwal. Patients between age 18 to 60 of either sex, having Severity of Alopecia Tool (SALT Score) of less than 50 were enrolled. Intralesional triamcinolone acetate (5mg/ml with lignocaine) was infiltrated at a dose of 0.1 ml /cm2 into the dermis.Trichoscopic features were recorded using Heine Delta 30 digital Dermatoscope at baseline and after 12 weeks. **Results:** Mean age was 28.19 ± 8.54. There was statistically significant decrease in mean of SALT Score before (9.91 ± 6.77) and after (4.94 ± 4.04) treatment. The frequency of black dots, exclamation mark hairs and yellow dots at baseline was 91%, 81% and 23%. After treatment these frequencies reduced significantly to 8%, 7%, and 9% respectively (p-value<0.001). While the proportion of short vellus hair and circle hair at baseline (63%,12%) increased to 99% and 70% after treatment respectively (p-value<0.001). **Conclusions:** It was concluded that clinical improvement in Alopecia Areata after treatment with intralesional steroids can be demonstrated with disappearance of yellow dots, black dots, exclamation mark hair and appearance of circle and short regrowing hair on Trichoscopy.Thus, highlighting the utility of Trichoscopy as a valuable tool for monitoring therapeutic response in Alopecia Areata.

INTRODUCTION

Alopecia Areata is a common autoimmune disease of hair follicles and nails that clinically manifests as non-scarring hair loss ranging from circumscribed patches to involvement of the whole scalp when it is called Alopecia Totalis [1]. The worldwide prevalence of Alopecia Areata is 2% and prevalence is lower in adults than children [2, 3]. The interplay of immune, genetic and environmental factors causes Alopecia Areata. Hair follicles, which are normally protected from immune responses due to immune privilege, can become the target of immune attack due to generation of autoantigens and increased expression of major histocompatibility complex Class I molecules [4, 5]. Various treatment modalities are available ranging from topical corticosteroids, calcineurin inhibitors and contact immunotherapy to intralesional and systemic corticosteroids. The most appropriate first-line therapy in adults when Severity of Alopecia Score (SALT) is 0-30% is intralesional corticosteroids and when SALT score is 31-50% both oral or intralesional alone, or in combination are recommended. Intralesional steroids are found to be more effective and potent than other routes [6]. Alopecia Areata is usually diagnosed on clinical examination and the presence of exclamation mark hairs on trichoscopy. Since the last decade trichoscopy has emerged as a useful non-invasive tool to examine the scalp skin and hair, thus helping to confirm the diagnosis in difficult cases [7, 8]. Ganjoo and Thappa, reported presence of yellow dots, black dots, broken hairs and tapering hairs before treatment, and >75% reduction in these features were observed in all study subjects after

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treatment with intralesional steroids [9]. Another study found that a 100% response was seen on trichoscopy appearing as short vellus hair or circle hairs, in all patients after using intralesional steroids [10]. While another study found that success (short vellus hair or terminal hair on trichoscopy) was observed in 42.9% cases and mean SALT score was reduced from 4.24 ± 4.4 to 1.37 ± 0.84 (change=2.87 ± 3.56) after using intralesional steroids [11]. Various studies have been carried out to evaluate different trichoscopic features in Alopecia Areata but very few research articles are available that report the alterations in trichoscopic features after treatment with various therapies. The main rationale for carrying out this study was the paucity of data regarding determining the change in trichoscopic pattern of Alopecia Areata with intralesional corticosteroids in the local population. Furthermore, we wanted to compare our study's results with international studies.

Alopecia areata is a common autoimmune disorder, but evidence on objective monitoring of treatment response using trichoscopy—especially before and after intralesional steroid therapy—remains limited, particularly in South Asian populations. Most existing studies focus on clinical improvement and SALT score, while standardized comparative data on dynamic trichoscopic changes (e.g., black dots, yellow dots, and regrowth signs) are still scarce. There is also inconsistency in reporting trichoscopic response patterns across different studies and populations. This study aimed to compare the changes in trichoscopic features of Alopecia Areata and SALT score before and after treatment with intralesional steroid.

METHODS

This descriptive longitudinal study was carried out after approval from Sahiwal Teaching Hospital Ethical Review Board (S.No 66/IRB/SLMC/SWL) and Research Evaluation Unit of the College of Physicians and Surgeons, in the Department of Dermatology, Sahiwal Teaching Hospital from March to August, 2024. A sample size of 100 was calculated by using WHO calculator, taking 95% confidence level, effect size (d) of 0.07 and mean decrease in SALT score 2.87 ± 3.56 after using intralesional steroids for Alopecia Areata [11]. Patients of either sex, age between 18 to 60 years, and having SALT Score of less than 50 were selected using non-probability consecutive sampling. After taking written informed consent a performa containing information like demographic data, duration of disease, baseline SALT score and trichoscopic features was filled. Trichoscopy was done by using Heine Delta 30 Dermatoscope with 10x magnification (Heine Optotechnik, Germany). Intralesional injection using triamcinolone acetonide (5mg/ml with lignocaine) was then infiltrated at a dose of 0.1 ml /cm2 into the dermis. A total of three injections at one-month interval each were given, and patients were followed up after one month of completion of treatment. SALT score and trichoscopic features were reassessed again at the 12 week. Success was labeled if short vellus hair or circle hair were observed on trichoscopy. Data analysis was done using SPSS version 27.0. Quantitative variables such as age, duration of disease and SALT score (before and after) were presented as mean and standard deviation. Qualitative variables such as gender and trichoscopic features were presented as frequency and percentages. Kolmogorov-Smirnov test indicated that the data followed a normal distribution. So to compare SALT Score before and after treatment paired sample t-Test was used and for comparison of trichoscopic features, paired sample proportions test was used. Age, gender and duration of disease were used to make stratified groups of the data. An independent sample t-test was applied to calculate mean decrease in SALT Score in stratified groups. Statistical significance was determined at p value ≤0.05.

RESULTS

In a total of 100 Alopecia Areata patients, the mean and standard deviation of age was 28.19 ± 8.54 years (95% C.I: 26.4, 29.8). The majority (72%) of study participants belonged to 18-37 years of age. There were 47% male and 53% female participants with male-female ratio of 1:1.13. The mean disease duration was found to be 9.5 ± 14.17 months (95% C.I: 6.7, 12.4). A statistically significant decrease in the mean of SALT Score before (9.91 ± 6.77), and after (4.94 ± 4.04) treatment was noted. Patients with disease duration of less than 12 months showed a statistically significant reduction in their mean SALT Score compared to those with a longer disease duration (>12 months) (Table 1).

Table 1: Mean Difference of SALT Score Between Stratified Groups

Variables	Group	Frequency	Mean ± SD	95% C. I	p-value
Age (Years)	18-37	72	5.14 ± 3.97	(4.2, 6.0)	0.470*
	38-57	28	4.50 ± 3.80	(3.0, 5.9)	
Gender	Male	47	4.19 ± 3.35	(3.2, 5.1)	0.06*
	Female	53	5.64 ± 4.27	(4.4, 6.8)	
Disease Duration (Months)	<12 Months	80	4.28 ± 3.37	(3.5, 5.0)	<0.001*
	>12 Months	20	7.67 ± 4.78	(5.4, 9.9)	
SALT Score	Baseline	100	9.91 ± 6.77	(8.5, 11.2)	<0.001**
	12 Week		4.94 ± 4.04	(4.1, 5.7)	

*Independent sample t-test statistics, **paired sample t-test

On trichoscopic evaluation, the frequency of black dots (91%), exclamation mark hairs (81%), and yellow dots (23%) decreased significantly after treatment (8%, 7%, 9%) respectively. On the other hand, the proportion of short vellus hair (63%) and circle hair (12%) at baseline increased to 99% and 70% after treatment, respectively (Table 2). Picture I and 2 depict two patients of Alopecia Areata showing change in trichoscopic features at baseline and at 12 weeks.

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Table 2: Difference in Proportions of Trichoscopic Features before and After Treatment

Trichoscopic Features	Baseline	At 12 Weeks	p-value
Black Dots	91%	8%	<0.001
Exclamation Mark Hair	81%	7%	<0.001
Short Vellus Hair	63%	99%	<0.001
Yellow Dots	23%	9%	<0.001
Circle Hairs	12%	70%	<0.001

Paired sample proportion test statistics

Baseline: (a) Naked eye examination finding (b)blue arrow shows exclamation mark hair and green arrow shows black dot (10x magnification). At 12th week: (c) Naked eye examination findings(d)Trichoscopic findings: Blue arrows show vellus hair orange arrow shows pigtail hair (10x magnification)(Figure 1).

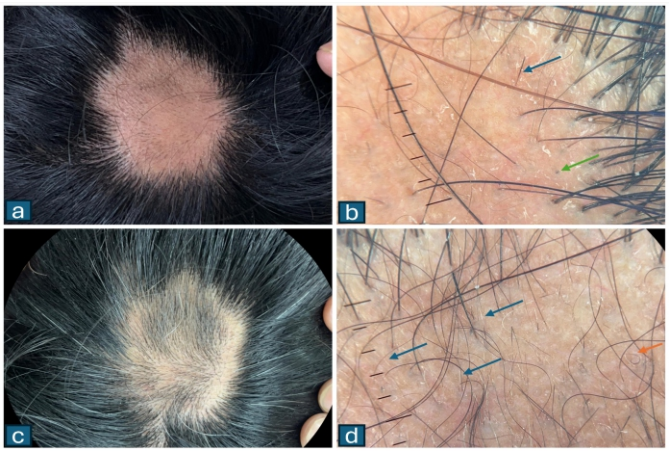

Figure 1: Alopecia Areata in A 30 Year Old Male, Naked Eye and Trichoscopy Examination

Baseline: (a) Naked eye examination finding (b) Trichoscopic findings: Blue arrows show exclamation mark hair, green arrows yellow dots, red arrow black dot (10x magnification). At 12th week (c) Naked eye examination finding (d) Trichoscopic findings: Blue arrows show pigtail hairs(10x magnification),(Figure 2).

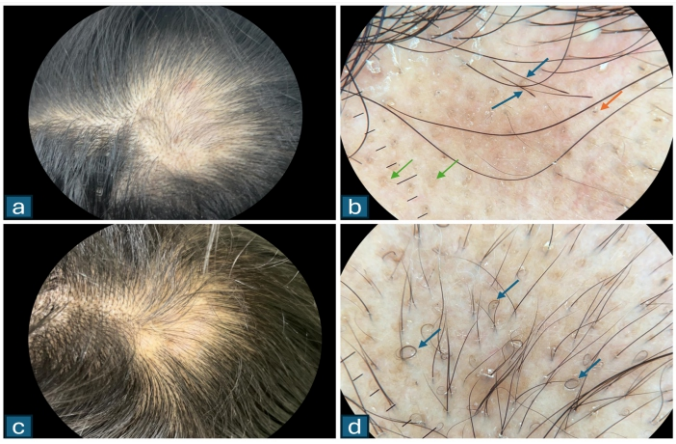

Figure 2: Alopecia Areata in A 30 Year Old Female, Naked Eye and Trichoscopy Examination

DISCUSSION

Alopecia Areata is the most common autoimmune cause of non-scarring hair loss. At times it becomes a challenging task for the dermatologist to determine the efficacy of various treatment modalities.Previously clinical improvement and SALT Scoring were used but with the advent of technology, digital trichoscopy has emerged as a useful tool for therapeutic monitoring.In our study, Alopecia Areata was observed mostly in the 3rd decade of life and the mean disease duration was 10 months.These findings were consistent with the previous studies [9, 12]. The participants of this study belonged mostly to the female gender.In contrast, the male gender predominates in the studies carried out previously [10, 12]. This disparity can be attributed to the demographic, cultural and methodological factors.Severity of Alopecia Tool (SALT Score) is an objective method to calculate severity of Alopecia Areata [13]. In the current study, the mean SALT score was 9.91 ± 6.77 at baseline and decreased significantly after treatment (4.94 ± 4.04). Fawzy *et al.*, and Ageeba *et al.*, reported an analogous pattern of decrease in SALT score from baseline (4.68 ± 3.54 and 4.24 ± 4.4) to final SALT Score (0.55 ± 0.58 and 1.37 ± 1.84) respectively [11, 14]. Trichoscopic features of Alopecia Areata can be divided into signs of active disease, chronic disease and regrowth signs. Signs of active disease are black dots, exclamation mark hair, broken hair and less commonly, pohl-pinkus constrictions and coudability hairs [15, 16].Yellow dots are mostly seen in chronic disease and short regrowing hair and circle hair are signs of regrowth [17, 18]. Broken hairs are formed due to the increased fragility of the hair shaft and when they break at scalp level, it forms black dots. They are mostly seen in the active phase of disease and tend to disappear in the re-growing phase [7].In our study, they were the most common finding, seen in 91% of patients which subsequently decreased significantly to 8% after treatment.Ganjoo *et al.*, reported black dots in 84% of patients and their frequency decreased to nil at 12 weeks of treatment [9].Similarly, a significant reduction was noted after treatment from 85.7% and 68 % to 14.3% and 12% in previous studies [11, 14].These findings were in concordance with our results. Exclamation mark hair forms due to rapid conversion to telogen phase from anagen phase.They are tapered proximally close to scalp surface. They are the most specific finding of Alopecia Areata present in active disease but can also be observed in trichotillomania, chemotherapy-induced alopecia, anagen effluvium, etc [7].In the present study, their frequency significantly decreased from 81% at baseline to 7% after treatment.This finding is consistent with the previous literature showing a significant decrease in their proportion after treatment [19].Due to the prolonged telogen phase, hair follicle infundibula tend to be filled with

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keratin or sebum, forming yellow dots [15]. Yellow dots were seen in 23% of patients at baseline and decreased to 9% in our study. A similar frequency (28%) was reported by Ageeba *et al.*, [14]. In contrast, the reported frequency in the existing literature ranges from 80-95% [9, 20].Short vellus hairs are short regrowing hypopigmented hair.They appear for a short time and with change to pigmented regrowing terminal hair. They represent the regrowth phase of Alopecia Areata.In the current study, the frequency of short vellus increased significantly from 63% at baseline to 99% after treatment. Likewise, a significant increase from 56% to 100% of short vellus hair was noticed in a previous study [10]. Circle hair or pigtail hairs are a sign of regrowth in Alopecia Areata.These are short, coiled hairs with tapered ends. In our study, 12% of patients had them at baseline but their proportion increased to 70% after treatment. There is a significant correlation between regrowth and the frequency of circle hairs observed in a study carried out by Fawzy *et al.*, [11]. Trichoscopy is a non-invasive diagnostic tool that aids in establishing diagnosis and monitoring disease severity. Trichoscopic features of active disease and regrowth signs of hair in response to the therapy may augment the cutaneous examination. This study emphasizes the need to consider trichoscopic examination as an aid to cutaneous examination for diagnosis and optimal management of Alopecia Areata.

The study is limited by its single-center design, relatively short follow-up period (12 weeks), and lack of a control or placebo group, which restricts long-term outcome evaluation and comparative effectiveness assessment. The use of non-probability sampling and reliance on clinical trichoscopic interpretation may also introduce observer bias. Future studies should include multicenter randomized controlled trials with longer follow-up durations to assess sustained treatment response and relapse patterns. Additionally, incorporating standardized trichoscopic scoring systems and digital image analysis could improve objectivity and strengthen the reproducibility of findings.

CONCLUSIONS

It was concluded that clinical improvement in Alopecia Areata after treatment with intralesional steroids can be demonstrated with disappearance of yellow dots, black dots, exclamation mark hair and appearance of circle and short regrowing hair on Trichoscopy. Thus, highlighting the utility of Trichoscopy as a valuable tool for monitoring therapeutic response in Alopecia Areata.

Authors' Contribution

Conceptualization: SH, ZR
Methodology: SH, ZR, SAAG, HK
Formal analysis: SH, ZR, SAAG
Writing and Drafting: SAAG
Review and Editing: SAAG, SH, ZR, SAAG, HK

All authors approved the final manuscript and take responsibility for the integrity of the work

Conflicts of Interest

All the authors declare no conflict of interest.

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REFERENCES

[1] Simakou T, Butcher JP, Reid S, Henriquez FL. Alopecia Areata: A Multifactorial Autoimmune Condition. Journal of Autoimmunity.2019 Mar; 98:74-85. doi: 10.1016/j.jaut.2018.12.001.

[2] Us Salam S, Rafiq Z, Aziz N, Anwar A. Frequency of Alopecia Areata with Other Autoimmune Disorders. The Professional Medical Journal.2022Jan;29(02): 227-31. doi: 10.29309/TPMJ/2022.29.02.6565.

[3] Lee HH, Gwillim E, Patel KR, Hua T, Rastogi S, Ibler E *et al.* Epidemiology of Alopecia Areata, Ophiasis, Totalis, and Universalis: A Systematic Review and Meta-Analysis.Journal of the American Academy of Dermatology.2020Mar;82(3):675-82.doi:10.1016/j.jaad.2019.08.032.

[4] Bertolini M, McElwee K, Gilhar A, Bulfone-Paus S, Paus R.Hair Follicle Immune Privilege and Its Collapse in Alopecia Areata.Experimental Dermatology.2020Aug;29(8)703-25.doi:10.1111/exd.14155.

[5] Abarca YA, Scott-Emuakpor R, Tirth J, Moroz O, Thomas GP, Yateem D *et al.* Alopecia Areata: Understanding the Pathophysiology and Advancements in Treatment Modalities.Cureus. 2025 Jan: 17(1). doi: 10.7759/cureus.78298.

[6] Meah N, Wall D, York K, Bhoyrul B, Bokhari L, Sigall DA *et al.* The Alopecia Areata Consensus of Experts (ACE) study: Results of an international Expert Opinion On Treatments for Alopecia Areata.Journal of the American Academy of Dermatology.2020Jul; 83(1):123-30. doi: 10.1016/j.jaad.2020.03.004.

[7] Waśkiel A, Rakowska A, Sikora M, Olszewska M, Rudnicka L. Trichoscopy of Alopecia Areata: An Update.The Journal of Dermatology.2018Jun;45(6): 692-700.doi: 10.1111/1346-8138.14283.

[8] Lacarrubba F, Micali G, Tosti A. Scalp Dermoscopy or Trichoscopy. Current Problems in Dermatology.2015 Feb;47: 21-32. doi: 10.1159/000369402.

DOI: https://doi.org/10.54393/pjhs.v6i3.2773

[9] Ganjoo S and Thappa DM. Dermoscopic Evaluation of Therapeutic Response to an Intralesional Corticosteroid in the Treatment of Alopecia Areata. Indian Journal of Dermatology, Venereology and Leprology.2013May;79:408.doi:10.4103/0378-6323.110767.

[10] Albadri W and Inamadar AC. Comparison of Clinical Efficacy and Trichoscopic Changes in Alopecia Areata of the Scalp following Treatment with Intralesional Triamcinolone Acetonide and Autologous Platelet-Rich Plasma.Clinical Dermatology Review.2023Jul;7(3):229-33.doi:10.4103/cdr.cdr_14_22.

[11] Fawzy MM, Abdel Hay R, Mohammed FN, Sayed KS, Ghanem ME, Ezzat M. Trichoscopy as an Evaluation Method for Alopecia Areata Treatment: A Comparative Study.Journal of Cosmetic Dermatology.2021Jun;20(6):1827-36.doi:10.1111/jocd.13739.

[12] Divyalakshmi C, Hazarika N, Bhatia R, Upadhyaya A. Utility of Trichoscopy in Comparison to the Standard Methods for Assessing the Disease Activity, Severity, and Therapeutic Response in Alopecia Areata. Cosmoderma.2023Jun;3.doi:10.25259/CSDM_62_2023.

[13] Darchini-Maragheh E, Moussa A, Rees H, Jones L, Bokhari L, Sinclair R. Assessment of Clinician-Reported Outcome Measures for Alopecia Areata: A Systematic Scoping Review.Clinical and Experimental Dermatology.2025Feb;50(2):267-78.doi:10.1093/ced/llae320.

[14] Ageeba BA, Zaki AM, El Rewiny EM. Microneedling with Triamcinolone Acetonide versus Intralesional Triamcinolone Acetonide in Treatment of Alopecia Areata.Al-Azhar International Medical Journal.2023;4(2):37.doi:10.58675/2682-339X.1667.

[15] Pirmez R. The dermatoscope in the Hair Clinic: Trichoscopy of Scarring and Nonscarring Alopecia. Journal of the American Academy of Dermatology.2023Aug;89(2):S9-15.doi:10.1016/j.jaad.2023.04.033

[16] Monica PA and Tiplica GS. Non-Invasive Techniques for Evaluating Alopecia Areata.Maedica.2023Jun;18(2): 333. doi: 10.26574/maedica.2023.18.2.333.

[17] Gómez-Quispe H, Moreno-Arrones OM, Hermosa-Gelbard Á, Vañó-Galván S, Saceda-Corralo D. [Translated article] Trichoscopy in Alopecia Areata. Actas Dermo-Sifiliograficas.2023Jan;114(1):T25-32.doi:10.1016/j.ad.2022.08.027.

[18] Al-Dhubaibi MS, Alsenaid A, Alhetheli G, Abd Elneam AI. Trichoscopy Pattern in Alopecia Areata:A Systematic Review and Meta-Analysis.Skin Research and Technology.2023Jun;29(6):e13378.doi:10.1111/srt.13378.

[19] El Sayed MH, Ibrahim NE, Afify AA. Superficial Cryotherapy versus Intralesional Corticosteroids Injection in Alopecia Areata: A Trichoscopic Comparative Study.International Journal of Trichology.2022Jan;14(1):8-13.doi 10.4103/ijt.ijt_130_20.

[20] Sahu VK, Datta A, Sarkar T, Gayen T, Chatterjee G. Role of Trichoscopy in Evaluation of Alopecia Areata: A Study in A Tertiary Care Referral Centre in the Eastern India. Indian Journal of Dermatology.2022 Mar; 67(2): 127-32. doi: 10.4103/ijd.ijd_577_21.