Original Article:

Effect of Intralesional Triamcinolone Acetonide on Alopecia Areata

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Abstract

Background: Alopecia areata (AA) is a chronic, non-scarring autoimmune disorder characterized by patchy hair loss, significantly impacting patient quality of life. The lifetime prevalence of AA is approximately 1.7%, with substantial emotional and psychological implications. **Objective:** This study primarily sought to investigate the efficacy of two different concentrations of intralesional triamcinolone acetonide (ILT) in managing patchy scalp alopecia areata. **Methodology:** An open clinical trial was conducted at the National Institute of Diseases of the Chest and Hospital, Dhaka Bangladesh, from January 2023 to June 2024. The study enrolled 55 patients with patchy alopecia areata involving less than 50% of scalp surface area. Participants were systematically divided into two treatment groups: Group A (n=27) received intralesional triamcinolone acetonide at 5 mg/mL, while Group B (n=28) received 10 mg/mL concentration. Patients underwent monthly intralesional injections, with comprehensive assessments performed at 12 weeks and a one-year follow-up to evaluate treatment response and potential recurrence. **Results:** The two concentration groups' treatment outcomes were identical. After 12 weeks, 44.4% of patients in the 5 mg/mL group and 42.9% in the 10 mg/mL group experienced complete hair regrowth, with 63.0% and 64.3% of patients reporting satisfactory overall results, respectively. With no documented cases of hypopigmentation, the side effect profiles were mild and similar, mainly manifesting as folliculitis (3.7% vs. 3.6%), telangiectasia with atrophy (3.7% vs. 10.7%), and localized atrophy (11.1% in the 5 mg/mL group vs. 10.7% in the 10 mg/mL group). The chronic nature of alopecia areata was demonstrated by the recurrence rates during follow-up, which were 50.4% for the 10 mg/mL group and 44.4% for the 5 mg/mL group. This study emphasizes the similar effectiveness of intralesional triamcinolone acetonide at both concentrations, giving physicians options for treatment choices. It also emphasizes the significance of early intervention and all-encompassing patient care. **Conclusions:** Intralesional triamcinolone acetonide represents a valuable treatment modality for localized alopecia areata. While demonstrating significant potential for hair regrowth, the study also revealed the challenges associated with long-term management, characterized by relatively high recurrence rates.

Keywords: Intralesional triamcinolone acetonide, Alopecia areata, Scalp hair regrowth, Steroid injection therapy, Autoimmune hair loss, Treatment concentration efficacy.

Introduction

Alopecia areata (AA), is a chronic, remitting,non-scarring, presumed autoimmune disease of thehair follicles leading to hair loss. AA is commonly linked to severe emotional discomfort and has a 1.7% lifetime frequency. A very diagnostic feature is the appearance of distinct, hairless areas with yellow spots and short, broken hairs (exclamation mark hairs) surrounding the edges.[1-4] There are various methods of treatment approaches that should be customized based on the depth and severity of the sickness as well as the

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patient's psychological state. Regretfully, there is no cure or preventative therapy.[5-7]

One of the initial therapeutic choices for AA in adults is often intralesional steroids, typically triamcinolone acetonide (TA) in dosages of 2.5–10 mg/mL. The patient's age, the degree of hair loss, and the results of prior treatments all influence the treatment option. The best options for treating localized AA in adults with less than 50% scalp involvement are topical calcineurin inhibitors, oral corticosteroids, intralesional (IL) corticosteroid injections, and local immunotherapy (diphencyprone, anthralin).[1,8,9] The first-line IL corticosteroid treatment for people with patchy, limited AA is still triamcinolone acetonide (TA). Different clinics employ different IL corticosteroid dosages and dilutions for AA therapy, and doctor expertise influences the IL injection dosages.[1,10] Generally, TA doses of 2.5 mg/mL are advised for the face (beard, eyebrows) and 5 mg/mL for the scalp.[11] However, case series with small sample numbers and diverse patient groups make up the majority of the present research.[3]Alopecia areata has long been treated with intradermal corticosteroid injections. A series employing hydrocortisone was originally reported by Kalkoff& Macher in 1958. Later, Gombiner&Malkinson (1961) reported the use of triamcinolone 10 mg/mL, while Orentreich et al. (1960) presented injections of insoluble forms of prednisolone, hydrocortisone, and fludrocortisone as a viable technique to treat AA.[12,13,14] The advantages of IL injections of 5 mg/mL triamcinolone hexacetonide and 10 mg/mL TA were reported by Porter and Burton (1971). 15,16 Hair regrowth after 12 weeks was best accomplished in the ITA group, according to prior open-label randomized research evaluating the effectiveness of topical bethametasone valerate foam, tacrolimus ointment, and intralesional triamcinolone acetonide (ITA) (10 mg/mL) for the treatment of localized AA.[17]

Methodology:

It was a study with open clinical trial. Within the data collection period, in this study 55 patients were enrolled if they were diagnosed histologically and clinically with AA. From January 2023 to June 2024, this study was conducted in a private chamber and as an outpatient at the National Institute of Diseases of the Chest and Hospital in Bangladesh. Patients of all ages who had patchy alopecia areata (AA) on their scalps that covered less than 50% of their scalp surface area and were receiving treatment with monthly injections of triamcinolone acetonide at a dose of 5 mg/mL or 10 mg/mL were specifically eligible to participate. Patients undergoing combination therapy and those with alopecia totails or universalis, as well as those with extensive scalp involvement (surface area >50%), were excluded from the study. Only the scalp patches were evaluated, although individuals with AA patches on both the scalp and other areas (such as the beard, moustache, or eyebrows) were included. Informed consent was given by each patient or their legal guardian to participate in the study. We took serial photos of the patients, if any were available, and their medical records. Demographic information (age, gender), AA characteristics (affected scalp surface area, duration, number of patches, nail and extra scalp involvement), and medical history (history of AA, comorbidities, atopy, and intralesional triamcinolone acetonide family history of AAon alopecia areata) were among the data extracted from medical records.Because there is no leakage between the syringe and needle, BD insulin (1 cc) syringes are a good option. As a diluent, sterile saline is better than xylocaine because the latter stings more. When treating eyebrows, it can be helpful to apply a topical anesthetic 30 to 60 minutes before the treatment in order to reduce injection pain. Additionally, a needleless device (such as DermajetTM) can be used to administer ILCs. Betweenpatients, the device needs to be sterilized. Every four to six weeks, the treatments are repeated. In four to eight weeks, initial regrowth is frequently observed. The ILCs should be discontinued if, after six months of treatment, there is no improvement. Some AA patients may have glucocorticoid resistance due to thioredoxin reductase 1 expression being downregulated in the outer root sheath. ILCs are typically not administered to children under the age of ten due to injection site pain. ILT was performed monthly for all patients. Using a 30-gauge needle, the steroids diluted with lidocaine or regular saline were injected at 1-cm intervals, beginning from the patch's edge and working toward its centre; roughly 0.1–0.2mL was injected per site.

Prior to the second and third treatments, response of the treatment and side effects were documented. At the follow-up visit, one year following the last injection, a recurrence assessment was conducted.

Result

A thorough comparison of Group A (ILT 5 mg/mL) and Group B (ILT 10 mg/mL) is given by the results from the four tables (Tables 1-4). Table 1 demonstrates that the groups' demographics are similar, with a similar mean age (20.9 years in Group A vs. 20.0 years in Group B, p=0.333) and gender distribution (44.4% female in Group A vs. 46.4% in Group B, p=0.323). Alopecia areata (AA) patches treatment duration, number, and affected scalp surface area did not differ significantly (p>0.05), according to Table 2, which highlights clinical characteristics. Additionally, there were comparable rates of atopy, comorbidities, nail involvement, family history of AA, and prior AA history in both groups. Table 3 presents the results of treatment for Group A. At 12 weeks, 44.4% of the group experienced complete hair regrowth, 63.0% reported satisfactory results, and 18.5% experienced side effects, with atrophy being the most common (11.1%), followed by folliculitis (3.7%) and telangiectasia with atrophy (3.7%), with no hypopigmentation cases. Group B's treatment results are shown in Table 4; at 12 weeks, 42.9% of the group experienced full hair regrowth, 64.3% reported satisfactory results, and 17.9% experienced side effects, such as atrophy (10.7%), telangiectasia with atrophy (3.6%), and folliculitis (3.6%), with no hypopigmentation. Group B had a marginally higher recurrence rate (50.4%) than Group A (44.4%).

Table I: Distribution of the respondents' according tosocio-demographic characteristics (n=55)

Parameter	Group A ILT: 5 mg/mL (N = 27)		Group B ILT: 10 mg/mL (N = 28)		P-value
	n	%	n	%	
Gender					
Female	12	44.4	13	46.4	0.323
Male	15	55.6	15	53.6	
Age					
Mean(SD) (years)	20.9 (11)		20.0 (12)		
≤18	10	37.0	10	35.7	0.333
19–30	12	44.4	13	46.4	
>30	5	18.5	5	17.9	

Table II: Distribution of the respondents' according to clinical features and medical history (n=55)

Parameter	Group A ILT: 5 mg/mL (N = 27)		Group B ILT: 10 mg/mL (N = 28)		P-value
	n	%	n	%	
Duration of treated AA patches					
Mean(SD)(months)	13.6 (27)		12.8 (26)		0.835
≤2	9	33.3	10	35.7	
3–6	8	29.6	8	28.6	
>6	10	37.0	10	35.7	
Number of patches					
Mean (SD)	3.4 (4.2)		3.5 (4.0)		0.452
1	9	33.3	10	35.7	
2	8	29.6	8	28.6	
≥3	10	37.0	10	35.7	
Scalpsurfaceareaaffected					
	5.4 (5.2)		5.0 (4.8)		0.658
<3	8	29.6	9	32.1	
3–5	9	33.3	10	35.7	
6+	10	37.0	9	32.1	
AA's past history	6	22.2	7	25	0.553
Personalhistoryofatopy(allergic rhinitis, atopicdermatitis,asthma,)	8	29.6	8	28.6	0.587
Comorbidities(diabetes mellitus, hypothyroidism, hypertension,low ferritin)	8	29.6	8	28.6	0.587
Juvenilerheumatoidarthritis,psoriasis, anxiety, vitiligo, depression					
Nailinvolvement(leukonychia, finepitting,trachyonychia,)	2	7.4	3	10.7	0.522
Extrascalpsites(legs,eyebrow,beard, moustache)	6	22.2	6	21.4	0.663
AA's Familyhistory	4	14.8	4	14.3	0.536

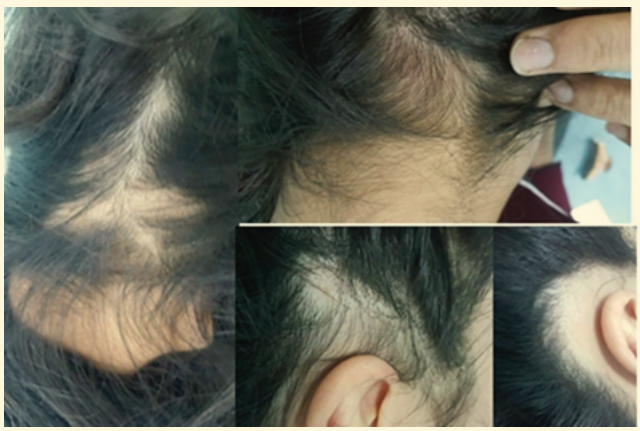

fig 1. A patient with temporal and occipital patches showed complete hair regrowth after single injection of ILT 10mg/mL

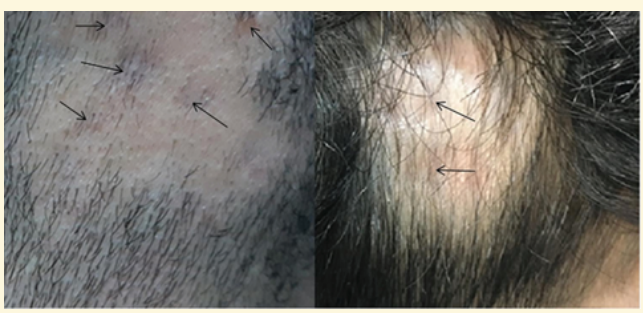

fig 2. Skin atrophy observed at the location of the ILT injection(arrows)

Table III: Distribution of the respondents' according to responseoftreatment group AILT: 5 mg/mL (N=27)

Variables	ILT5mg/mL (N=27)	
	n/N	%
Patientswhose haircompletelyregrowthafter12weeks	12/27	44.4
Patientswho showedsatisfactoryoutcomeat12weeks	17/27	63.0
Overallside-effects	5/27	18.5
Atrophy	3/27	11.1
Telangiectasiaand Atrophy	1/27	3.7
Folliculitis	1/27	3.7
Hypopigmentation	0/27	0.0
Recurrence of Folliculitis Hyperpigmentation following a year of monitoring	12/27	44.4

Table IV.Distribution of the respondents' according to responseoftreatmentgroup B ILT:10 mg/mL (N=28)

Variables	ILT10 mg/mL (N=28)	
	n/N	%
Patientswhose haircompletelyregrowthafter12weeks	12/28	42.9%
Patientswho showedsatisfactoryoutcomeat12weeks	18/28	64.3%
Overall side-effects	5/28	17.9%
Atrophy	3/28	10.7%
Atrophy and telangiectasia	1/28	3.6%
Folliculitis	1/28	3.6%
Hypopigmentation	0/28	0.0%
Recurrence after 6 months of follow-up	13/28	50.4%

Discussion

We included two patient groups in this study that had similar clinical and demographic traits. According to the results,most often used two ILT doses (5 and 10 mg/mL) for treating patchy AA on the scalp may be similarly effective after 12 weeks. ILT 10 mg/mL, however, had somewhat quicker outcomes and was better after four weeks. Only a small number of studies that primarily examined the effectiveness of varying ILT concentrations in the treatment of patchy AA were found in the literature review; these studies used disparate approaches and had inconsistent findings. Three ILT concentrations (2.5 mg/mL, 5 mg/mL, and 10 mg/mL) were shown to be similarly efficacious and superior to normal saline in intra-pilot research with four patients.[18]ILT response is concentration dependent, according to the findings of another trial with 15 patients, but these findings were not statistically significant.[19]More recent studies found that 5 mg/mL and 10 mg/mL were equally beneficial, based on a systematic review and meta-analysis of seven earlier investigations. However, the authors pointed out discrepancies among the studies that were part of the review about the main outcome that was examined, the method, the frequency, and the length of therapy and the accessibilityof clinical characteristics and demographic data.[3]

However, ILT 10 mg/mL was shown to be more effective than ILT 5 mg/mL, which in turn was more effective than ILT 2.5 mg/mL in a randomized controlled study. ILT 10 mg/mL was linked to a greater frequency of adverse cutaneous effects. However, there were just a few patches on the scalp in this study—28 patches received ILT 10 mg/mL treatment, compared to 27 patches receiving ILT 5 mg/mL—and patients were not observedfor more than six months.[1] Since only mild and local side effects (atrophy, telangiectasia, folliculitis, and dyspigmentation) were noted, ILT safety was clearly proven in this research. Although they were somewhat more common in the ILT 10 mg/mL group, the difference was statistically noteworthy. With 48% of patients in both groups achieving total hair regrowth and 70% experiencing excellent outcomes after 1–3 injections, the current study's results show a strong response to ILT therapy. Longer disease duration (>6 months) was shown to have negative effects, indicating that early treatment may improve the likelihood of a positive outcome. According to a prior study, a longer duration of alcohol use was linked to a lack of response to topical and intralesional corticosteroid regimens.[20]

Our results also show that, regardless of the ILT dosage, over half of AA patients will relapse. This study revealed common correlations between AA and autoimmune diseases. Some of these illnesses were only discovered through examinations or follow-up, even though the majority of patients had them known upon presentation. For instance, three of the seven individuals with hypothyroidism were identified by baseline screening. Furthermore, a young woman who had received efficient therapyfor patchy AA was later diagnosed with juvenile rheumatoid arthritis, and same sequential relationships were documented.[21,22]Patients' exposure to the local and systemic adverse effects of steroids. This corpus of research would greatly benefit from a comparison of even lower ILT concentrations (e.g., 2.5 mg/mL vs. 5 mg/mL). Several corticosteroid regimens (intralesional, topical, or their combination) are actually equally effective in treating focal AA, according to a current study.[20]

Conclusion

This study provides worthwhile insights into the management of alopecia areata using intralesional triamcinolone acetonide. The findings demonstrate that both 5 mg/mL and 10 mg/mL concentrations offer comparable efficacy in treating patchy scalp

AA, with the 10 mg/mL concentration showing marginally faster initial response. The relatively high rate of satisfactory outcomes and complete hair regrowth underscores the potential of ILT as a treatment option. However, the significant recurrence rate suggests that AA remains a challenging condition with a tendency for relapse. The study also highlighted important clinical observations, such as the potential association with AA of other autoimmune conditions like hypothyroidism and juvenile rheumatoid arthritis, highlighting the importance of thorough patient assessment and monitoring.

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References

1. Ustuner P, Balevi A, Özdemir M. Best dilution of the best corticosteroid for intralesional injection in the treatment of localized alopecia areata in adults. J Dermatolog Treat 2017; 28:753–61. DOI: 10.1080/09546634. 2017.1329497
2. Messenger AG, McKillop J, Farrant P, et al. British Association of Dermatologists' guidelines for the management of alopecia areata 2012. Br J Dermatol 2012; 166:916–26. DOI: 10.1111/j.1365-2133.2012. 10955.x
3. Yee BE, Tong Y, Goldenberg A, Hata T. Efficacy of different concentrations of intralesional triamcinolone acetonide for alopecia areata: A systematic review and meta-analysis. J Am Acad Dermatol 2020; 82:1018–21. DOI: 10.1016/j.jaad.2019.11.066
4. Safavi KH, Muller SA, Suman VJ, MoshellA, Melton L. Incidence of alopecia areata in Olmsted County, Minnesota, 1975 through 1989. Mayo Clin Proc 1995; 70:628–33. DOI: 10.4065/70.7.628
5. Alkhalifah A, Alsantali A, Wang E, McElwee KJ, Shapiro J.Alopecia areata update: part II. Treatment. J Am Acad Dermatol.2010;62(2):191–202. doi: 10.1016/j.jaad.2009.10.031
6. Shapiro J. Current treatment of alopecia areata. J Investig Dermatol SympProc.2013;16(1): S42–S44. Elsevier. doi:10.1038/jidsymp.2013.14
7. Lee S, Lee WS. Management of alopecia areata: updates and algorithmic approach. J Dermatol. 2017;44(11):1199–1211. doi:10.1111/1346-8138.13933
8. Rork JF, Rashighi M, Harris JE. Understanding autoimmunity of vitiligoand Alopecia Areata Jillian. Curr OpinPediatr2016; 28:463–9.DOI: 10.1097/MOP.0000000000000375
9. Barton VR, Toussi A, Awasthi S, Kiuru M. Treatment of pediatric alopeciaareata: A systematic review. J Am Acad Dermatol 2022; 86:1318–34.DOI: 10.1016/j.jaad.2021.04.077
10. Kassim JM, Shipman AR, Szczecinska W, Siah TW, Lam M,Chalmers J, et al. How effective is intralesional injection of triamcinoloneacetonide compared with topical treatments in inducing and maintaininghair growth in patients with alopecia areata? A critically appraised topic.Br J Dermatol 2014; 170:766–71. DOI: 10.1111/bjd.12863
11. Chu TW, AlJasser M, Alharbi A, Abahussein O, McElwee K, Shapiro J.Benefit of different concentrations of intralesional triamcinolone acetonidein alopecia areata: An intrasubject pilot study. J Am AcadDermatol 2015; 73:338–40. DOI: 10.1016/j.jaad.2015.04.049
12. Kalkoff KW, Macher E. Growing of hair in alopecia areata &maligna afterintracutaneous hydrocortisone injection. Hautarzt1958; 9:441–51.
13. Orentreich N, York N, Sturm HM, Weidman AI, Pelzig A, Hills F. Localinjection of steroids and hair regrowth in alopecia. JAMADermatol 1960; 82:894–902. DOI: 10.1001/archderm.1960.01580060048005.
14. Gombiner A, Malkinson FD. Triamcinolone suspension in alopecia areata.Arch Dermatol 1961; 83:158–60. DOI: 10.1001/archderm.1961.01580120116030
15. Abell E, Munro DD. Intralesional treatment of alopecia areata with triamcinoloneacetonide by jet injector. Br J Dermatol 1973; 88:55–9. DOI:10.1111/j.1365-2133. 1973.tb06672.x
16. 14. Porter D, Burton JL. A comparison of intra-lesional triamcinolone hex acetonideand triamcinolone acetonide in alopecia areata. BrJ Dermatol 1971; 85:272–3. DOI: 10.1111/j.1365-2133. 1971.tb07230.x
17. 16. Fukuyama M, Ito T, Ohyama M. Alopecia areata: Current understandingof the pathophysiology and update on therapeutic approaches, featuringthe Japanese Dermatological Association guidelines.J Dermatol 2022; 49:19–36. DOI: 10.1111/1346-8138.16207
18. Chu TW, AlJasser M, Alharbi A, Abahussein O, McElwee K, Shapiro J. Benefit of different concentrations of intralesional triamcinolone acetonide in alopecia areata: an intrasubject pilot study. J Am Acad Dermatol. 2015;73(2):338–340. doi: 10.1016/j.jaad.2015.04.049

19. Stallings AM. ILK index and regrowth in alopecia areata. J Investig Dermatol Symp Proc. 2015; 17:47–49. doi:10.1038/jidsymp.2015.27
20. Suchonwanit P, Kositkuljorn C, Mahasaksiri T, Leerunyakul K. A comparison of the efficacy and tolerability of three corticosteroid treatment regimens in patients with alopecia areata. J Dermatol Treat. 2020:1–21.
21. Forouzan P, Cohen PR. Systemic lupus erythematosus presenting as alopecia areata. Cureus. 2020;12(6).
22. Forouzan P, Cohen PR. Incipient diabetes mellitus and nascent thyroid disease presenting as beard alopecia areata: case report and treatment review of alopecia areata of the beard. Cureus. 2020;12(7).