

Comparative study of efficacy of excimer light therapy vs intralesional triamcinolone vs topical 5% minoxidil: an observational study

Zonunsanga

Department of Skin and VD, RNT Medical College, Udaipur, Rajasthan-313001, India

Corresponding author: Dr. Zonunsanga jrkos04@gmail.com

ABSTRACT

Introduction: Alopecia Areata is a chronic inflammatory disease that involves hair follicles, and sometimes nails, caused by T-cell mediated autoimmune mechanism. Current treatment modalities includes corticosteroids (oral, topical or intralesional), Minoxidil, Contact sensitizers like DNCB, DPCP and SADBE, Immunosuppressants like Methotrexate or Azathioprine, DMARDs like Sulfasalazine, and Phototherapy. **Materials and methods:** After taking consent, 40 patients treated with excimer light, 46 patients treated with triamcinolone injection intralesionally and 14 patients treated with topical minoxidil 5% were compared by their photographs taken prior to treatments, at 2 months and 6 months follow up. **Results:** Among the excimer group, 21/32 (61.76%) with single patch and 1/6 (16.67%) with multiple patches achieved >50% hair regrowth. Among Triamcinolone group, 23/30 (76.67%) with single patch and 10/16 (62.5%) with multiple patches achieved >50% hair regrowth. Among the Minoxidil group, 4/12 (33.33%) with single patch and none i.e 0/2 with multiple patches achieved >50% regrowth. **Conclusion:** After comparing the efficacy of Excimer light therapy, intralesional triamcinolone and 5% Minoxidil, it was concluded that intralesional triamcinolone seems to be the most efficacious. Multiple patches were more resistant than single patch. Scalp response much better than beard.

Key words: Alopecia areata; Minoxidil; Triamcinolone; Excimer light therapy

INTRODUCTION

Alopecia Areata is a chronic inflammatory disease that involves hair follicles, and sometimes nails, caused by T-cell mediated autoimmune mechanism. It is the most common hair loss after Androgenic Alopecia. It affects all ages, predominantly 2nd to 4th decade and both sexes equally [1]. It is a non-scarring telogenic Alopecia, predisposed by HLA's such as DQ3, DQ7, DR4 and DR11, CD4+ T helper cells and is associated in some patients with Thyroid dysfunctions, Psychological problems, Atopy, Pernicious anemia and infections [2]. Strong association between autoimmune polyglandular syndrome type 1 (APS1), caused by mutations in the 7 AIRE gene on chromosome 21 and AA has also been reported [3].

It can present as well demarcated patch of hair loss, multiple patches or extensive hair loss as in Alopecia

totalis / universalis [3]. It causes significant cosmetic and psychological distress in most of the people it affects.

Current treatment modalities includes corticosteroids (oral, topical or intralesional), Minoxidil, contact sensitizers like DNCB, DPCP and SADBE, Immunosuppressants like Methotrexate or Azathioprine, DMARDs like Sulfasalazine and Phototherapy [4-6].

MATERIALS AND METHODS

The aim of the study is to compare the efficacy of Excimer light therapy, intralesional Triamcinolone and topical Minoxidil 5%. This was an observational study which was done at Department of Dermatology, RNT Medical college, Udaipur, Rajasthan. The study was conducted between June 2013 to September 2014. For the purpose

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of easy comparison and segregations of data, the following inclusion and exclusion criteria were followed.

Inclusion criteria

- Patients who give consent for the study
- Patients presenting with Alopecia Areata, 1 to 6 patch/patches, sizes 2 cm to 10 cm
- Subjects having patch for at least 3 months, with no evidence of hair regrowth
- Who never taken treatment before or who has not taken any treatment for at least 8 weeks
- No history of Photosensitivity
- Patients who were willing and capable of cooperating to the extent and degree required by the protocol.

Exclusion criteria

- Patients who do not give consent
- Patients who received treatment for alopecia areata within the past 8 weeks.
- Patients with alopecia totalis or alopecia universalis
- Patients with known photosensitivity like having polymorphous light eruption, connective tissue diseases, porphyria or Xeroderma pigmentosum
- Pregnant or breast-feeding patients
- History of previous skin cancer.

Those patients in the excimer light therapy group were given the therapy twice a week, but not on consecutive days. The treatment was started at 300 mJ/cm², and it was increased by 100 mJ/cm² every visit. If erythema persisted for more than 2 days, the treatment was skipped until erythema was healed: and the previous dose was restarted. The end point was either 16 sittings or hair growth whichever was earlier.

Those of Intralesional Triamcinolone group was given Intralesional Triamcinolone 5 mg/ml every 3 weeks. Minoxidil group were given 5% topical Minoxidil and were advised to apply twice a day, 1 ml in each patch.

Those patients who were given treatments were taken photographs at the first visit prior to treatments after 2 months and then after 6 months and the photographs were compared. Those patients who achieved >50% hair regrowth were considered successful treatment.

RESULTS

A total of 100 patients were included in the study: 40 patients in Excimer light therapy group, 46 in

triamcinolone group and 14 in Minoxidil group. The results of the study presented Tables 1 and 2. Clinical results of treatment with excimer light, triamcinolone and 5% minoxidil illustrate Figures 1 to 3.

DISCUSSION

Alopecia areata (AA) is a non-scarring, autoimmune, inflammatory, relapsing hair loss affecting the scalp and/or body. It is also known as Pelad or Area Celsi. It is commonly manifests as a sudden loss of hair in localized areas. In acute-phase AA, CD4+ and CD8+ T cells infiltrated in the juxta-follicular area. In chronic-phase AACD8+ T cells dominated the infiltrate around hair bulbs which contributes to the prolonged state of

Table 1: Results of the study according to number of lesions

Mode of treatment	>50% regrowth	
	Single	Multiple
Excimer	21/34 (61.76%)	1/6 (16.67%)
i/l Triamcinolone	23/30 (76.67%)	10/16 (62.5%)
Minoxidil	4/12 (33.33%)	0/2

Table 2: Results of the study according to the sites of the lesions

	>50% improvement				Both
	Scalp		Beard		
	Single	Multiple	Single	Multiple	
Excimer	22/32 (68.75%)	1/6 (16.67%)	0/7	0	0/1
Triamcinolone	22/25 (88%)	8/10 (80%)	1/5 (20%)	2/6 (33.33%)	0
Minoxidil	4/10 (40%)	0/1	0/2	0/1	0



Figure 1: (a) Patient treated with excimer light (pretreatment) (b) patient treated with excimer light (after 2 months) (c) Patient treated with excimer light (after 6 months)

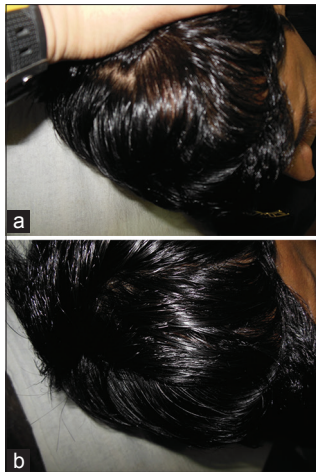


Figure 2: (a) Patient treated with triamcinolone (after 2 months)
(b) Patient treated with triamcinolone (after 6 months)

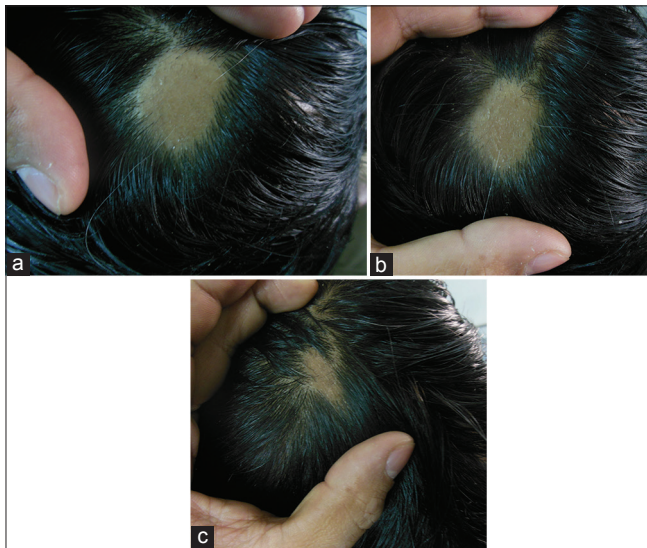


Figure 3: (a) Patient treated with 5% minoxidil (before treatment)
(b) Patient treated with 5% minoxidil (after 2 months) (c) Patient treated with 5% minoxidil (after 6 months)

hair loss. It is postulated that the characteristic T cell “swarm of bees” infiltrate seen in alopecia areata is the result of T cells attracted to the hair follicle by NKG2D-activating ligands.

Triamcinolone acetonide is used most commonly with the concentrations vary from 2.5-10 mg/mL, the lowest concentration being used on the face. A concentration of 5 mg/mL is usually sufficient on the scalp. Less than 0.1 mL is injected per site, with approximately 1 cm between injection sites [7]. It is mainly used for its immunosuppressive effects. Hair-growth-stimulating effect of minoxidil is stimulation of PGE₂ synthesis by activating prostaglandin-H synthase (PGHS)-1. Normally, Calcium influx normally

enhances epidermal growth factors to inhibit hair growth. Minoxidil is converted to minoxidil sulfate, which is a potassium channel agonist and enhances potassium ion permeability, thus opposing the entry of calcium into cells. It also seems to have direct mitogenic effect on epidermal cells and also prolongs the survival time of keratinocytes [8].

The biologic events by which laser and light sources produce hair growth is unclear. Hypertrichosis is the result of follicles converting from telogen (the resting phase) to anagen (the active phase), or vellus follicles transforming into terminal follicles. Sunlight has been recognized as a promoter of hypertrichosis. Although the pathogenesis is unknown, evidence shows UV radiation may upregulate production of prostaglandin E₂, an inflammatory mediator that is known to induce reversible eyelid hypertrichosis and to stimulate hair growth when applied topically on animal models [9].

In this study, 100 patients were included in the study. Among the excimer group, 21/32 (61.76%) with single patch and 1/6 (16.67%) with multiple patches achieved > 50% hair regrowth. Among Triamcinolone group, 23/30 (76.67%) with single patch and 10/16 (62.5%) with multiple patches achieved >50% hair regrowth. Among the Minoxidil group, 4/12 (33.33%) with single patch and none i.e 0/2 with multiple patches achieved >50% regrowth. Regarding the sites of involvement, among those who achieved >50% regrowth, 22/32 (68.75%) had single patch on scalp, 1/6 (16.67%) had multiple patches on scalp. Among the triamcinolone group who achieved >50% regrowth, 22/25 (88%) had single patch on scalp, 8/10 (80%) had multiple patches on scalp, 1/5 (20%) had single patch on beard, 2/6 (33.33%) had multiple patches on beard. Among minoxidil group who achieved >50% regrowth, 4/10 (40%) had single patch on scalp, none among those who had multiple patches achieved successful results.

A study conducted on the efficacy of 308-nm excimer lamp for the treatment of alopecia areata by Ohtsuki A, et al showed that out 16 patients who completed the study, four (57%) of those with single AA showed re-growth involving more than 50% of lesional areas, while 2 (29%) showed regrowth involving less than 50% of lesional areas. Hair regrowth was documented in 86% of single AA patients. 6 patients (67%) with multiple patches showed re-growth involving more than 50% of lesional areas while two (22%) showed regrowth involving less than 50% of lesional areas [10]. Another study done by Al-Mutairi N, et al. on 308-nm

excimer laser for the treatment of alopecia areata on 42 patients, hair regrowth was observed in 41.5% of treated areas. Hair regrowth was noticed to begin to appear during the second month of therapy. No regrowth of hair was noted on the control patches. Laser therapy was administered twice a week for a maximum of 24 sessions. Apart from erythema at the treated sites, there were no significant adverse effects [11]. In our study, 21/32 (61.76%) with single patch and 1/6 (16.67%) with multiple patches achieved > 50% hair regrowth. Abell and Munro reported hair regrowth in 71% of patients with subtotal alopecia areata treated by triamcinolone acetonide injections and in 7% of a placebo group [12] while in our study, 23/30 (76.67%) with single patch and 10/16 (62.5%) with multiple patches achieved >50% hair regrowth.

In a placebo-controlled, double-blind study conducted by Price et al, although hair regrowth was observed in 63.6% and 35.7% of the minoxidil-treated and placebo groups respectively only 27% of the minoxidil-treated patients showed cosmetically acceptable hair regrowth [7], while in our study, 4/12 (33.33%) with single patch and none i.e 0/2 with multiple patches achieved >50% regrowth.

LACUNAE OF THE STUDY

It was not controlled study. Besides, the effects of duration of the disease and comorbidities (which could have some effects on the response of the treatments) were not included in the study.

CONCLUSION

Although all the three modalities of treatment are useful for treatment of alopecia areata, intralesional triamcinolone seems to be the most efficacious. Multiple patches were more resistant than single patch. Scalp response much better than beard, the reason being to explore further.

CONSENT

The examination of the patient was conducted according to the Declaration of Helsinki principles. Written informed consent was obtained from the patient for publication of this article and any accompanying images.

REFERENCES

1. Mehta BA, Raka A, Bharmbhatt V. Comparative Study Of Various Regimens In Alopecia Areata. *Internet J Dermatol.* 2012;9:1.
2. Galan-Gutierrez M, Rodriguez-Bujaldon A, Moreno-Gimenez JC. Update on the treatment of Alopecia Areata. *Actas Dermosifiliogr.* 2009;100:266-76.
3. Ito T, Tokura Y. The role of cytokines and chemokines in the T cell-mediated autoimmune process in alopecia areata. *Exp Dermatol.* 2014;23:787-91.
4. Aubin F, Vigan M, Puzenat E, Blanc D, Drobacheff C, Deprez P, et al. Evaluation of a novel 308nm monochromatic excimer light system in dermatology: a pilot study in different chronic localised dermatoses. *British journal of Dermatology.* 2005;152:99-103.
5. Garg S, Messenger AG. Alopecia Areata: Evidence based treatment. *Semin Cutan Med Surg.* 2009;28:15-8.
6. Wasserman D, Guzman-Sanchez DA, Kimberly S, McMichael A. Alopecia Areata. *Int J Dermatol.* 2007;46:121-31.
7. Chang KH, Rojhirunsakool S, Goldberg LJ. Treatment of severe alopecia areata with intralesional steroid injections. *J Drugs Dermatol.* 2009;8:909-12.
8. Alsantali A. Alopecia areata: a new treatment plan. *Clin Cosmet Investig Dermatol.* 2011;4:107-15.
9. Rangwala S, Rashid M. Alopecia. A review of laser and light therapies. *Dermatol Online J.* 2012;18:3.
10. Ohtsuki A, Hasegawa T, Komiyama E, Takagi A, Kawasaki J, Ikeda S. 308-nm excimer lamp for the treatment of alopecia areata: clinical trial on 16 cases. *Indian J Dermatol.* 2013;58:326.
11. Al-Mutairi N. 308-nm excimer laser for the treatment of alopecia areata. *Dermatol Surg.* 2007;33:1483-7.
12. Ganjoo S, Thappa DM. Dermoscopic evaluation of therapeutic response to an intralesional corticosteroid in the treatment of alopecia areata. *Indian J Dermatol Venereol Leprol.* 2013;79:408-17.

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