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Original Article

Comparison of efficacy of intralesional triamcinolone versus 308nm Excimer laser in the treatment of localized alopecia areata

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Abstract

Objective Comparison of efficacy of intralesional triamcinolone versus 308nm Excimer laser in the treatment of localized alopecia areata.

Methods This study was done at dermatology unit Khyber teaching Hospital Peshawar, from 1st January 2023 to 30th June, 2023.All patients were allocated randomly into two groups by block randomization. Group A received 308 nm excimer laser twice weekly and group B got intralesional triamcinolone (10 mg/1ml) every three weeks. Patients were followed up at 12 weeks and mean SALT score at base line and follow up were documented. A response to treatment was labeled as effective if there was >75% hair growth (improvement) from baseline.

Results As per calculated sample size, a total of 92 patients were equally divided into two groups, A and B, i.e. 46 patients in each group. Result analysis in our study showed that in group A, mean SALT score decreased from 15.44 at baseline to 5.42 at 12 weeks follow, with excimer Laser. Likewise, the mean SALT score in group B decreased from 14.64 at base line to a mean value of 6.35 at 12 week follow up with intralesional steroid treatment. From an efficacy point of view, group A showed an efficacy (>75% hair re-growth at 12 week follow up) of 56.5% while group B showed 67.4%.

Conclusion Our study concludes that intralesional triamcinolone is more effective than 308 nm Excimer laser in the treatment of localized Alopecia areata.

Key words
Alopecia areata; Excimer Laser; Triamcinolone; Hair follicle; SALT score.

Introduction

Alopecia areata is an ailment of immune dysregulation that results in hair loss devoid of scarring that occurs without signs of inflammation and manifests as T cell destruction of hair follicles and, in rare cases, nails.[1] Hair loss can affect the entire scalp (alopecia totalis) or the entire body in severe situations (Alopecia Universalis).[2] 0.1 to 0.2% of the world's population experiences alopecia areata at one point in time.[3] In Japan, United States and United kingdom the prevalence of alopecia areata has been recorded as 0.8%, 2.18% and 0.58% respectively.[4-6]

Improvement without any treatment has long been known as a feature of alopecia areata and occurs in as many as 66% of the diseased individuals.[7] About 50 percent of patients recover from this disorder even without

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treatment and up to 25% may develop alopecia totalis (complete hair loss from the whole scalp) and alopecia universalis (complete hair loss from the whole body), and a number of patients will have multiple episodes during life time.[8]

Topical and intralesional steroids, immunomodulators like pimecrolimus, and tacrolimus, topical minoxidil, ultraviolet light, such as the excimer laser, anthralin, platelet rich plasma therapy, microneedling, contact dermatitis inducers and oral medicines like methotrexate, cyclosporine, systemic corticosteroids and sulfasalazine are all used to treat alopecia areata.[9] Janus kinase inhibitors have recently been added to the medicinal armory of AA with exceptional results.[10] Topical and intralesional corticosteroids have always been the 1st choice when it comes to managing cases of localized alopecia areata, with success rates reaching as high as 70%.[11] Kapoor P *et al*. have documented that more than 50% of their patients had >75% regrowth of hairs after 12 weeks of treatment with I/L triamcinolone.[12] Excimer laser is another efficient treatment option for AA as reported by Byun JW *et al*. in their study that 60% of the localized AA patients had >50% of the hair growth after treating with excimer laser for 12 weeks.[13]

Alopecia areata targets all age groups, predominantly involving the children and adolescents with no specific gender or ethnic preference. Intralesional corticosteroids are easy to dispense and though may require special expertise but no specialized paraphernalia. The excimer laser is successful in refractory cases and offers a hope that goes beyond intralesional steroids. Published research is quite exiguous on the comparative study of these two drugs in the treatment of AA. The trial will yield crucial knowledge and shall serve as a footing for future researchers and will aid in updating of local treatment standards.

Methods

The study was conducted in the Department of Dermatology, KTH Peshawar after taking the approval of synopsis. All patients with alopecia areata were assessed. Patients who fulfill the inclusion criteria were incorporated in the trial. The participants were asked to sign the informed consent. A complete history along with a general physical, systemic and dermatological examination was performed. The patients were split into two batches based on blocked randomization. For the assessment of alopecia areata, the SALT score was be used. Patients in batch A were treated with 308 nm excimer laser twice weekly for 12 weeks while those in batch B were prescribed intralesional triamcinolone (10 mg/1ml) according to standard protocol, every three weeks for 12 weeks The efficacy of the treatment was assessed based on the Hair regrowth scale. Strict exclusion criteria were followed to exclude any confounding factor or bias from the study.

Stats were analyzed by utilizing SPSS version 22.0. For numerical variables like age, duration of alopecia areata and SALT score, the mean and standard deviation were generated. The categorical variables like gender, number of patches (single or multiple) and efficacy of treatment were reflected in terms of frequencies and percentage. The efficacies of the treatment were compared using the Chi-square test. Effect modifiers like age, gender and duration of AA (based on SALT score) were controlled through randomization. A P-value of <0.05 is kept as the level of statistical significance.

Results

A total of 92 patients engaged in our trial. Patients were distributed into 2 groups, A and B, by block randomization. Patients in group A were prescribed with 308 nm Excimer laser

Table 1 illustrative data of Age, Baseline SALT score, SALT score at 12 week follow up.

Demographics	*Group A (n=46) (Mean ±SD)*	*Group B (n=46) (Mean ± SD*
Age (Years)	28.32±7.07	31.71±6.16
Baseline SALT score	15.44 ± 7.98	14.64 ± 9.5
SALT score at 12 week follow up	5.42±5.6	6.35 ±9.1

Table 2 Frequencies and Percentages according to gender and number of patches.

	Group A (n=46)	*Group B (n=46)*
Male	28 (60.9%)	30 (65.2%)
Female	18 (39.1%)	16 (34.8%)
Single Patch	11 (23.29%)	13 (28.26%)
Multiple Patches	35 (76.08%)	33 (71.73%)

twice weekly for 12 weeks while group B patients were advised intralesional triamcinolone (10 mg/1ml) as per protocol every three weeks for 12 weeks. Each group was allocated 46 study subjects and none of the subject quitted the trial.

As per age distribution, a total of 25 (27.2%) patients were of the ages between 18 to 25 years, 44 (47.8%) patients were between 26 to 35 years of age and 23 (25%) were of the age between 36 to 45 years. In Group A, the mean value of age of patients was 28.32 and in group B, 31.71 mean value of patients' age was observed. The mean SALT score at base line in group A was 15.44, whereas the 12 week follow-up mean SALT score was 5.42. Likewise, the mean SALT score in group B was noted to be 14.64 at base line while a mean value of 6.35 was observed at 12 week follow up **(Table 1)**.

With respect to duration of disease, 59 (64.1%) patients had disease duration of less than 6 months whilst 33 (35.9%) patients had disease for more than 6 months.

In group A the number of male patients was 28 (60.9%) whereas the number of participating females was 18 (39.1%). Similarly in group B, 30 (65.2%) patients were males and 16 (34.8%) were females. In accordance with gender categorization, 58 (63%) male patients 34 (37%) female patients got involved in our study with. 24 patients were noted to have a single patch of alopecia areata, whereas 68 patients had multiple patches. 11 (23.91%) patients from group A were detected with a single patch, while 13 (28.26%) Patients from group B manifested a solitary patch. Similarly, 35 (76.08%) patients from group A developed multiple patches whereas patients having more than 1 patch in group B were 33(71.73%) **(Table 2)**.

Description of efficacy in both groups is shown in **Table 3**.

Discussion

This study determines the comparison of efficacy of intralesional triamcinolone versus 308 nm Excimer Laser in the treatment of localized alopecia areata. In our study that was carried out in the dermatology unit of Khyber teaching hospital Peshawar, the patients after being split into two groups A and B based on blocked randomization, received 308 nm excimer laser twice weekly and intralesional triamcinolone (10 mg/1ml) as per dose every three weeks, respectively.

Result evaluation at 12 weeks follow up in our study showed that both the treatment regimens showed significant decrease in mean SALT score from baseline. The mean SALT score at base line in group A dropped from 15.44 to 5.42 after 12 weeks of treatment with excimer Laser. Likewise, the mean SALT score in group B lessened from 14.64 at base line to a mean value of 6.35 at 12 week follow up.

Table 3 Efficacy (n=92).

Efficacy	*Group A*	*Group B*	*P value*
Yes	26 (56.5%)	31 (67.4%)	0.19
No	20 (43.5%)	15 (32.6%)	

Majority of patients in our study were in 25-35 years age group and most of them were males. Most of the patients i.e. 73.94% had multiple patches of alopecia areata. In this clinical trial, both treatments, i.e. 308 nm Excimer Laser and intralesional triamcinolone did not lead to such severe adverse effects, warranting the discontinuation of therapy and none of the patients the engaged in study left the trial.

The efficiency of intralesional triamcinolone was found superior to 308 nm Excimer laser with respective efficacies of 67.4% versus 56.5% at 12th week follow up.(p-value=0.19).

Byun JW *et al.* concluded in their study that 60% of the alopecia areata patients had >50% of the hair growth after receiving the treatment with excimer laser for 12 weeks.[13] Kapoor P *et al.* declared that more than 50% of their patients had >75% regrowth of hairs after 12 weeks of treatment with I/L triamcinolone. They also observed in their research that the mean SALT score in patients treated with triamcinolone reduced from 9.01 at baseline to 2.27 at 24 weeks.[12]

A Study done by Kianfar N *et al.,* in which sixteen patients with 99 alopecic patches participated percieved a positive response in hair regrowth (≥50%) in 47% of laser-treated patches and 66% in ILCS-treated ones.[13] Another study done by Amirnia *et al.* documented a 60-90% regrowth in 26.7% patients treated with Intralesional steroids at the end of week 12.[14] Kaur *et al.* also contributed by observing in their study that 50% regrowth in 67.5% of patients treated with intralesional triamcinolone.[15]

Zakaria W *et al.* asserted that a 308-nm excimer laser induces effective hair rejuvenation in all patients with alopecia areata.[16] Ohtsuki A *et al.* communicated via their research that hair regrowth occurred in 14 patients out of 16 that were given with 308nm laser. Among them, 10 patients showed more than 50% hair re-growth. Their results suggested that the 308-nm excimer lamp system was effective and safe for the treatment of both single and multiple patches of Alopecia areata.[17]

Hsu TC *et al.* purported that the overall response rate for the excimer light in treating AA was 41.2%, as five patients (29.4%) had more than 50% restoration of hairless patches and two patients (11.7%) had less than 50% improvement of involved area.[18]

In our study 308 nm Excimer showed promising results, especially in context of reduction of mean SALT score from baseline. Intralesional triamcinolone because of its superior efficacy stands out to be the 1st line therapy in localized alopecia areata.

A few flaws were also appreciated in our research. The investigative trial is limited to comparative efficacy at 3 month, while long-term remission and sustainability has yet to be determined. Double blinding was not adopted and safety prospect was not considered.

Conclusion

The trial purposes that treatment of localized alopecia areata with both 308 nm Excimer laser and Intralesional triamcinolone was successful in more than 50 % of the patients. The efficiency of intralesional triamcinolone was superior to 308 nm Excimer laser in treating the patients with localized alopecia areata.

Recommendations Use of excimer should be encouraged in those showing adverse results or not willing to opt for intralesional steroids. Studies on the combination of the both therapies should be done to evaluate additional benefits.

Ethical Approval: Institutional Review Board approval number 201/DME/KMC dated April 05, 2022.

Declaration of patient consent The authors certify that they have obtained all appropriate patient consent.

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Conflict of interest Authors declared no conflict of interest.

Author's contribution

JK: Concept, design of the work, data analysis, interpretation, critical review, final approval of the version to be published.

HG: Data acquisition, drafting of work, final approval of the version to be published.

IU: Design, result analysis, critical review, final approval of the version to be published.

MK: Result analysis, critical review, final approval of the version to be published.

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