

Comparison of Intra-lesional Methotrexate and Intra-lesional Triamcinolone Acetonide in the treatment of Localized Alopecia Areata

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ABSTRACT

Background: One of the common reasons of non-scarring, patchy or confluent hair loss that can affect any part of the body, but most frequently the scalp, is alopecia areata. Alopecia areata (AA) has a variety of therapy options, but it is still a difficult condition with varied severity, recurrence, and a significant cosmetic problem.

Aim: To compare the effects of intralesional triamcinolone acetate and intralesional methotrexate in the treatment of localized alopecia areata in patients at the dermatology department.

Study design: Comparative clinical study.

Methodology: The dermatology division of Sheikh Zayed Hospital Rahim Yar Khan conducted the current study. The current study included 128 participants. Each chosen group included 64 patients. The sample size was calculated assuming a research power of 80%, a confidence level of 95%, and an efficacy of 60.0% for methotrexate and 80.0% for triamcinolone. Using a 30-gauge needle connected to an insulin syringe, both groups will get intralesional injections in patches with alopecia areata three weeks apart for a maximum of four sessions. A follow-up will be conducted a year following the end of the treatment. The analysis of the data was done using SPSS 23. Chi-square/exact Fisher's tests were performed to examine the gender distribution, results, respondents, and recurrence rate between the two groups with a p-value of less than 0.05.

Results: Patients in group A had an average age of 29.2 +/-3.8 years, whereas those in group B had an average age of 30.0 +/-2.1 years. There was no discernible difference in the mean age of the patients between the two groups, according to an independent sample t test ($p = 0.178$). The gender distribution between the two groups is not significantly different, according to the p-value of 0.857. The p-value of 0.115 shows that there was no discernible difference in the two groups' rates of remission.

The p-value of 0.188 shows that the two groups' recurrence rates did not differ significantly from one another. **Practical Implication:** This study helped researchers investigate the efficacy of intra-lesional triamcinolone acetonide as a treatment for localized alopecia areata due to its accessibility and safety. Second, it added to the corpus of information in the field regarding alternative, successful treatment options that are comparable.

Conclusion: It was determined that there was no statistically significant difference between the outcomes for the Triamcinolone group and the Methotrexate group.

Keywords: Alopecia Areata, Efficacy, Intralesional Methotrexate, Triamcinolone Acetonide and Clinical Outcomes.

INTRODUCTION

Common, non-scarring, patchy hair loss at the scalp and elsewhere is known as alopecia areata (AA). It is an autoimmune disease called alopecia areata¹. The condition first manifests as a coin-shaped patch anywhere or a band-like lesion over the occipital or forehead (reverse ophiasis), and it can proceed to alopecia totalis or universalis. Pitting, longitudinal or transverse striations, onychomadesis, onychogryphosis, and onychodystrophy are just a few of the nail-related symptoms that could occur. The formation of several or a single, well-defined bald patch with short, breakable hair also known as "exclamation mark hair" present on the bald patch margins is a symptom of alopecia areata²

In people with a genetic predisposition, an autoimmune reaction mediated by T cells results in alopecia areata. In addition, vitiligo and thyroiditis, two autoimmune conditions, are linked to alopecia areata³.

The anagen phase of the hair cycle is altered in alopecia areata, and the transition from the anagen phase to the catagen phase and letogen phase occurs quickly⁴. Alopecia Areata can be treated both topically and systemically using a variety of medications, including as topical steroids, intralesional steroids, minoxidil, anthralin, and immunotherapy drugs like diphencyclopone (DPCP). Systemic steroid therapy, methotrexate, sulphasalazine, cyclosporin, infliximab, and adalimumab are examples of systemic alternatives⁵.

For limited scalp patches of alopecia areata, intralesional corticosteroids have been employed as the preferred treatment. One of the most popular steroids used to treat alopecia areata and promote hair growth is triamcinolone acetonide⁶.

Because it inhibits dihydrofolate reductase irreversibly and competes with it, methotrexate is an antagonist of folic acid. It is an antimetabolite with anti-inflammatory and immunosuppressive properties that can be employed in a variety of dermatological conditions⁷. In the treatment of alopecia areata, methotrexate may be administered alone or in conjunction with other therapies⁸. In cases of severe Alopecia areata, it helps to maintain and stimulate hair growth as revealed by literature review⁹.

Due to lack of local data regarding its treatment and comparison between treatment option thus we planned current study to compare the effects of intralesional triamcinolone acetate and intralesional methotrexate in the treatment of localized alopecia areata in patients at the dermatology department.

METHODOLOGY

This was comparative clinical study. Patients were enrolled through simple random sampling conducted at OPD Department of Dermatology Sheikh Zayed Hospital Rahim Yar Khan. Permission was granted by hospital ethical committee. The current study included 128 participants. Each chosen group included 64 patients. The sample size was calculated assuming a research power of 80%, a confidence level of 95%, and an efficacy of 60.0% for methotrexate and 80.0% for triamcinolone.

Patients were divided into two groups (A & B). Group B received intralesional triamcinolone acetonide, while Group A received intralesional methotrexate. Using a 30-gauge needle connected to an insulin syringe, both groups got intralesional injections in patches of alopecia areata three weeks apart for a maximum of four sessions. After the course of treatment was completed, a follow up was conducted.

Individuals with non-scarring Alopecia Areata patches for the previous six months, both genders, ages 12 to 40, and lesions up

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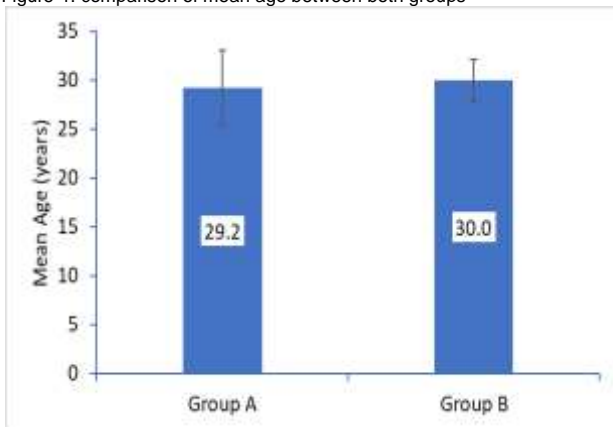
to 5 cm by 5 cm in size were included. Individuals have a history of methotrexate and trimethoprim-related hypersensitivity and reactions. Patients with any known chronic systemic disease and immunocompromised state (such as Diabetes Mellitus, Pulmonary Fibrosis, any respiratory disease, CKD, and Hepatitis), pregnant women and nursing moms, Individuals receiving immunosuppressive therapy and those receiving treatment for alopecia areata within the previous three months were excluded. Informed consent was taken and the graphic data (name, age, Sex, telephone contact number and address) was charted.

Statistical Analysis: SPSS 23 was used for the data analysis. For numerical data, such as age and number of lesions, mean and SD were provided. In the case of categorical data, such as gender, outcomes, responder, and recurrence, the frequency and % were determined. To compare the gender distribution, outcomes, responder, and recurrence rate between the two groups, chi-square/exact Fisher's tests were utilised. To compare the mean age and quantity of lesions between the two groups, an independent sample t test was utilised. A p-value of 0.05 or less was regarded as significant.

RESULTS

One hundred and twenty eight patients were used in this investigation, 64 in each of the two groups (A and B). Group B received intralesional triamcinolone acetonide, while Group A received intralesional methotrexate. Patients in group A had an average age of 29.2 +/-3.8 years, whereas those in group B had an average age of 30.0 +/- 2.1 years. There was no discernible difference in the mean age of the patients between the two groups, according to an independent sample t test (p = 0.178).

Figure-1: comparison of mean age between both groups



To compare the distribution of gender between two groups, the Chi-square test was employed. 38 male patients (59.4%) and 26 female patients (40.6%) made up Group A, while there were 39 male patients (60.9%) and 25 female patients (39.1%) in Group B. The gender distribution between the two groups is not significantly different, according to the p-value of 0.857.

Table-1: Comparison of gender distribution between both groups

Variables	Categories	Group A (Methotrexate)	Group B (Triamcinolone)
Gender	Male	39 (60.9%)	38 (59.4%)
	Female	25 (39.1%)	26 (40.6%)

The table that follows displays the average number of lesions and treatment sessions for patients in both groups. The mean number of lesions for Group A (methotrexate) was 1.22 +/-0.42. While for Group B (Triamcinolone), the mean number of lesions was 1.20 +/- 0.41 and the mean number of treatment sessions was 3.34 +/- 0.48, the mean number of sessions was 3.30 +/- 0.52.

Table-2: Comparison of number of lesions and sessions between both groups

Variables	Group A (Methotrexate)	Group B (Triamcinolone)
Number of Lesions	1.22 ± 0.42	1.20 ± 0.41
Number of sessions	3.30 ± 0.52	3.34 ± 0.48

Table 3 compares the frequencies of remission and recurrence in two patient groups. 56(87.5%) of the patients in group A went into remission, compared to 61 (95.3%) of the patients in group B. The p-value of 0.115 shows that there was no discernible difference in the two groups' rates of remission. Recurrence was seen in 7(10.9%) of the patients in group A, compared to 3(4.7%) of the patients in group B. The p-value of 0.188 shows that the two groups' recurrence rates did not differ significantly from one another.

Table-3: Comparison of remission and recurrence rate between both groups

Variable	Categories	Group A	Group B	p-value
Responders	Remission	56(87.5%)	61(95.3%)	0.115
	Non-remission	8(12.5%)	3(4.7%)	
Recurrence	Yes	7(10.9%)	3(4.7%)	0.188
	No	57(89.1%)	61(95.3%)	

DISCUSSION

Alopecia areata is a condition that causes non-scarring hair loss on the scalp or any other place that bears hair. There are many different clinical manifestations that might happen, from a small area of hair loss to total body or scalp alopecia (alopecia universalis). Both explicit and implicit evidence points to an autoimmune cause of alopecia areata^{10,11}. Although intralesional steroids are advised as the first line of therapy in the UK, USA, and KSA, topical steroids are extremely effective and routinely used to treat AA. "There is no solid trial evidence of any medication which provides long term benefit to patients with alopecia areata," according to a Cochrane study¹².

The current study was planned because there was no local comparative analysis of Alopecia areata therapy due to a lack of a research culture. In this study, 128 people of both sexes participated. There were 51 women and 77 males were present in the current project. Our enrollment procedure followed other studies, which also included a higher percentage of men than women.

The average number of lesions in the current project for Group A (methotrexate) was 1.22 +/- 0.42. The mean number of sessions was 3.30 +/- 0.52 while for Group B (Triamcinolone), the mean number of lesions was 1.20 +/- 0.41 and the mean number of treatment sessions was 3.34 +/- 0.48. The lesions in a previous study lasted 4 to 9 months, so their lifetime was considerably different from ours.

In this study, in comparison to 61 (95.3%) of the patients in group B, 56 (87.5%) of the patients in group A achieved remission. There was no appreciable difference in the rates of remission between the two groups, as indicated by the p-value of 0.115. Our findings were in accordance with a prior study, which found that both groups had even high levels of remission with no discernible p-value between the groups¹³.

Similarly in comparison to 3 (4.7% of the patients) in group B, recurrence was observed in 7 (10.9%) of the patients in group A. The two groups' recurrence rates did not statistically differ from one another, as indicated by the p-value of 0.188. Several earlier trials that indicated intra-lesional Triamcinolone as an efficient treatment for lesions revealed a similar, low failure rate of 5%.^{13,14} According to results of one previous study, it was revealed that hair re-growth started by 3 weeks among patients who received intra-lesional Triamcinolone having p-value of <0.03), turned satisfactory at 6,9 and 12 weeks of treatment. At the end of 12 weeks follow-up hair re-growth (>75%, HRG IV) was the best in this group (15 of 25, 60%), followed by others groups receiving different treatments.¹⁵ Similarly, one local study showed higher

efficacy (75%) among patients receiving dermal patch of Triamcinolone than receiving Tricolimus patch.¹⁶ Thus these findings were in line with our results that showed low recurrence and high efficacy among group receiving intra-lesional Triamcinolone.

CONCLUSION

It was determined that when methotrexate was used as a lesion treatment, there was no statistically significant difference between the outcomes of the triamcinolone group and the methotrexate group. As a result, intra-lesional methotrexate can be utilized as a new, inexpensive, safe treatment for lesions because its results were comparable to those of conventional care; as a result, it can aid in improving the management of lesions among patients in our clinical settings.

Limitations of study: This study was only done on a limited population, so in order to extrapolate the findings to wider populations, a larger study needs be done. Economical restrictions, a lack of genetic testing, and lengthy follow-ups are some of the constraints.

Author's contribution: SR, TH & MKS: Overall supervision and Write up and literature review. NA, SR & SR: Literature review help in write-up.

Conflict of interest: Nothing to declare

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