

## Original Research Article

# A comparative study of the outcomes of potent topical steroids versus topical tretinoin in patchy alopecia areata of scalp

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### ABSTRACT

**Background:** Alopecia areata (AA) is a common condition causing patchy alopecia of scalp. It can follow an unpredictable course with spontaneous exacerbations and remissions. Various therapeutic options have been tried to alleviate the cosmetic concern of the patient. The objective of this study is to compare the efficacy and safety of potent topical steroid versus topical 0.05% tretinoin in limited patchy alopecia areata of scalp.

**Methods:** In this study 50 patients of age group above 5 years and of both sexes having localized alopecia areata of scalp (<5 patches and <25% scalp involvement) were included in the study after taking an informed consent. It was a randomized prospective study done for a period of 12 weeks. Excluding the age and sex bias, patients were distributed into two treatment groups A and B. Group A was treated with 0.05% betamethasone dipropionate (BMD) cream applied twice daily. Group B was treated with topical 0.05% tretinoin cream applied twice daily. The response was assessed in every patient subjectively as well as objectively by alopecia grading scale and regrowth score (RGS) at the end of 12 weeks.

**Results:** We found that 72% of patients in Group A showed statistically significant clinical improvement (RGS 3 and 4) when compared to 36% patients in Group B.

**Conclusions:** It can be concluded that 0.05% BMD is still the most effective and economical topical treatment in less extensive forms of AA. However topical 0.05% tretinoin also gives a fairly good response. But further studies with tretinoin are needed to establish its role in limited alopecia areata.

**Keywords:** Alopecia areata, Betamethasone dipropionate, Tretinoin

### INTRODUCTION

Alopecia areata (AA) is a common cause of non-scarring alopecia of scalp or any hair bearing area of body. T-lymphocytes are found to play a definitive role in pathogenesis of this chronic inflammatory disease.<sup>1</sup> A positive family history and association with various autoimmune diseases is reported.<sup>2</sup>

It follows a chronic unpredictable course marked by spontaneous remissions and episodes of exacerbations.

Various therapeutic modalities have been described to suppress the disease activity and to alleviate the cosmetic concern of the patient.

Aims and objectives of this randomized prospective study were to evaluate and compare the efficacy of topical 0.05% betamethasone dipropionate (BMD) versus topical 0.05% tretinoin in patchy AA; to compare the adverse effects of both topical treatment modalities; to compare the patient compliance in both the groups.

## METHODS

The study was a prospective, randomized, comparative, single blinded study. 50 patients of age >5 years and of both sexes presenting to the Dermatology outpatient department of Krishna institute of medical sciences, Karad with clinical features of AA of scalp were included in this study. Study was conducted from July 2018 to July 2019.

### Inclusion criteria

- Patients clinically diagnosed as having localized AA (<5 patches and <25% scalp involvement) over the scalp.
- Patients who have not received any treatment before.
- Patients of both sexes and aged above 5 years.

### Exclusion criteria

- Alopecia of scalp other than AA.
- Extensive AA of scalp (>25% scalp involvement) or involving other areas of body.
- Patients with scars over the bald patch.
- Patients with active infection over the alopecia patch.
- Allergy or hypersensitivity to any component of the treatment products.
- Pregnant and lactating women.
- Patients with any underlying systemic disorders.

Ethical clearance was obtained from the Institutional Ethics Committee before the commencement of the study. Written informed consent was taken from patients before their participation in the study. Relevant history and clinical examination was done in each patient. Clinical examination of the patches was carried out with respect to number, size and distribution. Serial photographs were taken at each visit for documentation.

Eligible candidates for the study were randomly allocated into two groups viz., Group A and B. In each group, patients were given a different topical treatment for a period of 12 weeks. Group A patients applied 0.05% BMD cream twice daily. Group B patients applied topical 0.05% tretinoin cream twice daily over the patch.

Each patient was followed up fortnightly for a period of 12 weeks and response to treatment was evaluated subjectively and objectively. At each visit, history of any side effects due to treatment modality, appearance of any new patches, decrease in the size of present patches and patient compliance were noted.

Alopecia grading scale (AGS) was calculated for each patient at the first visit (baseline) and finally at 12 weeks. Mean AGS at baseline and at 12 weeks were then calculated in each group. Regrowth score (RGS) was calculated at 12 weeks. Mean AGS and RGS at 12 weeks were then used to compare the response in both groups.

**Table 1: Grading of RGS.**

RGS	Regrowth (%)	Grade
0	<10	Poor
1	11-25	Mild
2	26-50	Moderate
3	51-75	Good
4	>75	Excellent

RGS of equal to or more than 3 was considered as improved and statistically significant response. Chi-square test was for the statistical analysis of the data. A p value of 0.05% was considered as significant.

## RESULTS

Total 50 patients completed the study. There was no patient dropout in both the groups. There was an almost equal sex distribution in both the groups with slight male preponderance. Mean age of onset is 21.1 years. Majority (45%) of patients had a peak age of onset between 21-30 years. A positive family history of AA was seen in 8% of the patients. Majority of patients had 1 to 3 patches at the time of presentation. Baseline mean AGS in both the groups were comparable.

**Table 2: Patient profile and mean AGS in both the groups.**

	Group A steroid (0.05% BMD)	Group B (0.05% tretinoin)
<b>Total no. of patients</b>	25	25
<b>Mean age in years</b>	20.8	21.4
<b>Gender</b>		
Male	13	14
Female	12	11
<b>Mean AGS</b>		
<b>Baseline AGS</b>	13.08	11.98
<b>AGS at 12 weeks</b>	4.18	6.82

The baseline mean AGS of both treatment groups is almost equal and thus there was no statistically significant difference in mean AGS at baseline. At the end of the treatment, AGS was improved in both groups. The difference in mean AGS at 12 weeks was statistically significant.

An RGS of 0 and 1 are taken as Poor response, 2 as Moderate response, 3 as Good response and 4 as Excellent response. Patients having RGS of 3 and 4 were considered to have significant improvement. Based on RGS, findings noticed at the end of 12 weeks of treatment (Table 3) are 72% patients (18 of 25) in Group A showed significant improvement with majority 40% (10) showing excellent response (RGS 4). Around 36% patients (9 of 25) in Group B showed significant

improvement with majority 28% (7) showing good response (RGS 3).

**Table 3: RGS and number of patients in each score at the end of 12 weeks.**

RGS	Group A	Group B
0	0	0
1	0	4
2	7	12
3	8	7
4	10	2

Hence, response in Group A is significantly better than that of Group B.

**Table 4: Side effects of treatment modalities.**

Side effects	Group A	Group B
Folliculitis	1	-
Erythema with burning sensation	-	4

Folliculitis was seen in 1 patient treated with 0.05% BMD cream. Erythema with burning sensation was seen in 4 patients with topical 0.05% tretinoin. These side effects were temporary and reversible (Table 4).

**DISCUSSION**

In this study, the patient profile, male preponderance and a positive family history was similar to the findings of other studies.<sup>3,4</sup>

**Comparison of treatment outcome with different topical modalities**

*Efficacy of 0.05% BMD cream*

In this study, in Group A, 72% of the patients treated with 0.05% BMD cream showed RGS of 3 and 4 at the end of 12 weeks and only one patient in the group developed folliculitis as side effect (Figure 1). In the study done by Das et al, RGS >3 was seen in 70% of the patients treated with topical Betamethasone dipropionate, which is similar to this study.<sup>5</sup> In another study done by Mancuso et al, a RGS >3 was observed in 61% of the patients treated with Betamethasone valerate foam.<sup>6</sup> And an RGS >3 was seen in 27% of patients treated with betamethasone dipropionate lotion. A study carried out by Fiedler in 1992 showed similar response using Betamethasone dipropionate cream, which is similar to this study.<sup>7</sup>

*Efficacy of topical 0.05% tretinoin cream*

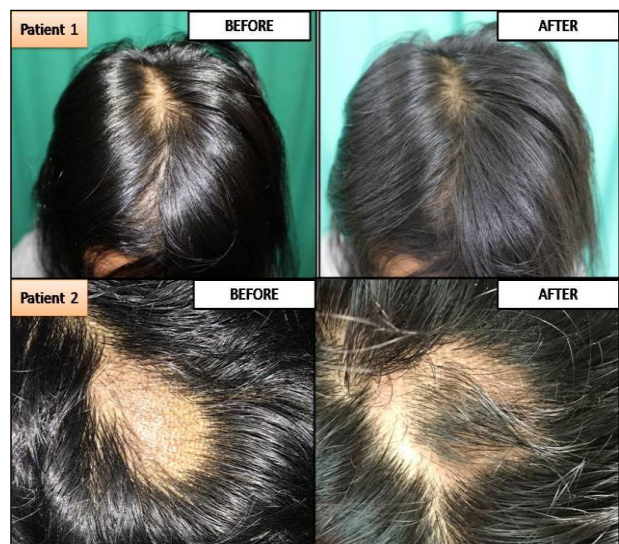
In a study done by Das et al, RGS (>3) was observed in 35% of patients treated with 0.05% tretinoin cream.<sup>5</sup> However study done by Baird et al, showed insignificant

response with topical tretinoin when applied for a period of 3 months.<sup>8</sup>

In this study, 36% of the patients in Group B showed an RGS of 3 and 4 at the end of the 12 weeks with topical 0.05% tretinoin cream (Figure 2). These findings were similar to that done by Das et al.<sup>5</sup> 4 patients in this group showed erythema with burning sensation which were temporary.



**Figure 1: Group A patients on topical 0.05% betamethasone dipropionate cream.**



**Figure 2: Group B patients on topical 0.05% tretinoin cream.**

**CONCLUSION**

From this study, it can be concluded that potent topical steroid is still the most effective and economical topical treatment and superior to other topical treatment modalities in less extensive forms of AA (less than 25%

scalp hair loss). However topical tretinoin also gives a fairly good response. But further studies with topical retinoids and with larger sample size are needed to assess its efficacy in AA.

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