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**Original Research Article**

# Dermoscopic evaluation of therapeutic response to intralesional triamcinolone acetonide in the treatment of Alopecia areata

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## ABSTRACT

**Background:** Alopecia areata is a common auto-immune condition, characterized by circumscribed, patches of hair loss usually of the scalp. There are various treatment modalities available but no treatment is fully curative or preventive. Also, alopecia areata can have devastating effects on the patient's quality of life and self-esteem. The aim of this study was to determine dermoscopy findings of alopecia areata that could be used as a clinical indicator of disease and also to evaluate the efficacy of intralesional injection Triamcinolone acetonide in the treatment of alopecia areata.
**Methods:** Seventy patients with alopecia areata, aged between 11 and 56 years were injected with intralesional triamcinolone acetonide at a 4 weeks interval. Treatment response was evaluated using re-growth scale approach. Dermlite DL3 dermoscope was used to assess disease activity, response to treatment and side effects. Using Wilcoxon signed rank test, changes were assessed in the severity of the disease during follow-ups.
**Results:** Baseline mean percentage area of scalp involved was 23.21±10.70. All the patients had black dots, 98.6% had yellow dots, 27.1% had broken hair, 74.3% had tapering hair and only 71.4% had vellus hair. At baseline, 15 (21.4%) patients had Alopecia Grading Score (AGS) 1, 29 (41.4%) had score 2 and 26 (37.1%) had a score of 3. Injection Triamcinolone acetonide (5 mg/ml) was injected at 1 cm intervals with 0.1 ml on each site and the procedure was repeated every 4 weeks for a maximum period of 24 weeks. From baseline level to the last follow up, proportion of patients with black dots reduced from 100% to 4.3%, yellow dots from 98.6% to 0%, broken hair from 17% to 0% and tapering hair from 74.3% to 0%. Vellus hair increased from 71.4% to 100%. Overall success rate in terms of achievement of re-growth Ssore 4 at last follow up was 60%.
**Conclusions:** Dermoscopic characteristics, such as black dots, yellow dots, broken hair, tapering hair and clustered short vellus hair are primary indicators of alopecia areata.

**Keywords:** Alopecia Areata, Black dots, Broken hair, Dermoscopy, Triamcinolone acetonide, Tapering hair, Vellus hair, Yellow dots

## INTRODUCTION

Alopecia areata (AA) is a common cause of non-scarring alopecia that occurs in a patchy, confluent or diffuse pattern. It may involve loss of hair from some or all areas of the body, most commonly from the scalp.[1] It is a chronic inflammatory disease which affects the hair follicles, and sometimes the nails. The onset may be at any age and there is no known race or sex preponderance. AA usually presents as patches of hair loss on the scalp but any hair - bearing skin can be involved. The affected skin is usually normal but may be slightly reddened.[2,3] In less than 2% of the cases, the condition can spread to the entire scalp (Alopecia Totalis) or to the entire epidermis

(Alopecia Universalis). The exact incidence and prevalence of the disease is not available. Safaviet al, reported its incidence to be 0.1-0.2% with a lifetime risk of 1.7%, with men and women being affected equally.[4] However, in a review study by Bhat et al, it is reported to account for 2-3% of the new dermatology cases in UK and USA, 3.8% in China, and 0.7% in India.[5] Both males and females are equally likely to be affected, but some studies reported male preponderance.

Although AA has few physical harmful effects, it may lead to psychological consequences, including high levels of anxiety and depression. Evidence exists that the experience of alopecia is psychologically damaging, causes intense emotional suffering, and personal, social and work-related problems. Hair loss associated with AA is often traumatic for both the genders, particularly affecting the women.[6] Eventually, it deteriorates the quality of life of the patient and impacts their overall health.[7]

Various methods to treat AA have been described including immunosuppressive treatment methods viz. corticosteroids (topical, intralesional, systemic), photochemotherapy, immunomodulatory treatments viz. Diphenylcyclopropenone and Squaric acid dibutylester and other treatment modalities such as Anthralin or Minoxidil.[8] Although intra-lesional corticosteroids (ILCs) have been used in the treatment of AA for about 60 years.[9] For limited scalp AA, ILC therapy is considered as the drug of choice by many experts. Corticosteroid is injected into the deep dermis level or just beneath the dermis in the upper sub cutis. The injections can be repeated at 4-6 week intervals. However, many reports lack an ideal objective parameter to measure treatment response. The high spontaneous remission rate in patchy AA makes it even harder to assess treatment efficacy.[9]

On the other hand, dermoscopy is a non-invasive procedure which was initially used to assess pigmented lesions. Recent studies have shown that dermoscopy can be a useful tool for the clinical diagnosis of AA by the presence of cadaverized hairs (black dots), exclamation mark hairs (tapering hairs), broken hairs, yellow dots and clustered short vellus hairs in the hair loss areas.[10] Black dots as remnants of exclamation mark hairs or broken hairs provide a sensitive marker for disease activity as well as severity of AA.[10] Yellow dots, are considered to be the most sensitive dermoscopic feature of AA. These are marked by distinctive array of yellow to yellow-pink, round or polycyclic dots that vary in size and are uniform in color.[12] Broken hairs, also considered to be similarly produced dystrophic hairs, are clinical markers of the disease activity and severity of AA.[11] Tapering hair (popularly called - exclamation mark hair) is commonly seen in AA. The narrowing of hair shafts toward the follicles is more readily perceived using dermoscopy than by naked eye.[11] Short vellus hair is also a diagnostic feature of AA, which can provide useful prognostic information and the regrowth of short vellus hairs after treatment can easily be seen in dermoscopy.[11]

Some of the dermoscopic features can be used to predict the activity and severity of AA. Tapering hair is considered as a marker of disease activity and known to reflect exacerbation of disease. Thus, dermoscopy is very useful in diagnosis as well as assessment of severity of AA. With this background, the present study was carried out to evaluate the efficacy of ILC (Triamcinolone Acetonide) in the treatment of AA by using dermoscopy to identify signs of early clinical response and adverse effects using an objective criterion. In this study, we also assessed the number of patients achieving re-growth scale (RGS) of 4 within 24 weeks of commencement of treatment.

## METHODS

All the patients who attended the OPD in the Department of dermatology, Venereology and leprosy, Era's Lucknow Medical College and Hospital, Lucknow over a period of eighteen months from November 2014 to May 2016, were included in our survey. The study group consisted of consenting patients of AA, who satisfied the set inclusion and exclusion criterions. The inclusion criteria included patients with AA of Scalp, who were older than 10 years of age, had patches for less than 1 year with less than 50% of their scalp covered in patches, had not undertaken any form of treatment for AA and were voluntarily willing to participate and complete all follow-up evaluations required for this study. Patients younger than 10 years of age were excluded, pregnant and lactating women, immunocompromised patients, patients with bleeding diasthesis and active scalp inflammation, patients receiving systemic steroids and any patient unwilling to participate in the study. These set of restrictions left us with 70 patients directly relevant for our study.

The baseline assessment of alopecia grading was performed using a standard 6 point scale score called Alopecia Grading Score (AGS): S0 = No alopecia, S1 = hair loss <10%, S2 = hair loss 11-25%, S3 = hair loss 26-50%, S4 = hair loss 51-75% and S5 = hair loss >75%.[12] A baseline digital camera photograph of the patch and dermoscopic parameters were recorded after taking informed written consent of the patient which included black dots, yellow dots, broken hair, tapering hair and vellus hair to make a note of the condition of the scalp before and after treatment was observed.

Next, triamcinolone acetonide (5 mg/ml) was injected at 1 cm intervals with 0.1 ml on each site of the patching on the scalp, and the procedure was repeated every 4 weeks for a maximum of up to 24 weeks. The patients were examined using a Dermlite DL3 Dermoscope. All the patients were followed up at 4 week interval and the response was evaluated clinically by using a 5 point semi-quantitative score, Re-Growth Scale (RGS), defined

as: 0 score (regrowth < 10%), 1 score (regrowth 11-25%), 2 score (regrowth 26-50%), 3 score (regrowth 51-75%), and 4 score (regrowth ≥ 75%). Finally, we also tried to identify the side effects like atrophy and telangiectasia, using a dermoscope.[12]


**Figure 1: Dermoscope Dermlite DL3.**

The data collected was tabulated in Microsoft Excel worksheet and statistical analysis was performed using SPSS 15. A descriptive statistical analysis using paired t-test, Chi-square test, Wilcoxon signed rank test was carried out to present the dermoscopic parameters and socio-demographical parameters. The outcome variables (clinical response and dermoscopic parameters) were assessed and quantified in each time point of 4 weeks interval for a maximum follow up period of 24 weeks. Chi-square test ($\chi^2$ test) was used to evaluate the association of outcome variables with the socio-economic and demographic factors. Correlations between the incidence of each dermoscopic finding and the disease activity were analysed using the Wilcoxon signed rank test. All statistical analyses were carried out at 95% confidence interval and the p-value < 0.05 was considered as significant.

## RESULTS

Present study was carried out with an aim to evaluate the efficacy of intralesional Triamcinolone Acetonide in the treatment of AA and to use dermoscopy to identify signs of early clinical response and adverse effects. For this purpose, a total of 70 patients falling in the sampling frame were enrolled in the study. Table 1 shows the demographic profile of the patients enrolled in the study. Age of patients ranged from 10 to 56 years. Majority of patients were aged <30 years (54.3%). On decade wise evaluation, maximum number of patients were aged 21-30 years (44.3%) followed by those aged 31-40 years (32.9%), 41-50 years (11.4%) and 11-20 years (10%) respectively. Minimum number of patients were aged <10 years (1.4%) and 51-60 years (1.4%) years. Majority of cases were females (n=41; 58.6%). Male to female ratio of study subjects was 0.71:1. With respect to place of residence, 70% were from rural and 30% were from urban areas. Majority of cases were housewives/student (n=49;70%) of these 26 (37.1%) were students and 23 (32.9%) were housewives. A total of 8 (11.4%) were skilled labourers/hawkers/vendors, 6 (8.6%) were unskilled labourers/farmers, 5 (7.1%) were assistants/clerks/teachers/shopkeepers and 2 (2.9%) were professionals/officers.

**Table 1: Demographic profile of the patients enrolled in the study.**

| Characteristic | Statistic |
|---|---|
| **Age** | |
| 11-20 Years | 7 (10.0%) |
| 21-30 Years | 31 (44.3%) |
| 31-40 Years | 23 (32.9%) |
| 41-50 Years | 8 (11.4%) |
| 51-60 Years | 1 (1.4%) |
| Mean age±SD (range) in years | 31.63±9.23 (10-56) |
| **Gender** | |
| Male | 29 (41.4%) |
| Female | 41 (58.6%) |
| **Place of residence** | |
| Rural | 49 (70.0%) |
| Urban | 21 (30.0%) |
| **Occupation** | |
| Housewife/student | 49 (70.0%) |
| Unskilled labour/farmer | 6 (8.6%) |
| Skilled labour/hawker/vendor | 8 (11.4%) |
| Assistant/clerk/teacher/shopkeeper | 5 (7.1%) |
| Professional/officer | 2 (2.9%) |

**Table 2: History and description of present illness.**

| Characteristic | Statistics |
|---|---|
| Number of bald patches | |
| 1 patch | 36 (51.4%) |
| 2 patches | 28 (40.0%) |
| 3 patches | 6 (8.6%) |
| Duration in months | |
| ≤3 months | 23 (32.9%) |
| 4-6 months | 27 (38.6%) |
| 7-9 months | 15 (21.4%) |
| 10-12 months | 5 (7.1%) |
| Mean duration ± SD (Range) in months | 5.03±2.66 (1-11) |
| Treatment history | 0 (0%) |

As presented in table 2, number of bald patches ranged from 1 to 3. Majority of cases had only 1 bald patch (51.4%). A total of 28 (40%) had 2 bald patches and 6 (8.6%) had 3 bald patches. Duration of current illness ranged from 1 to 11 months. Majority of patients had duration of current illness between 4 to 6 months (38.6%) followed by <3 months (32.9%), 7-9 months (21.4%) and 10-12 months (7.1%) respectively. Mean duration of current illness was 5.03 ± 2.66 months. None of the patients had taken any treatment for AA.

**Table 3: Clinical and dermoscopic findings at baseline.**

| Characteristic | Min | Max | Mean* | SD |
|---|---|---|---|---|
| % Area involved (n=70) | 5 | 45 | 23.21 | 10.70 |
| Black dots (n=70) | 3 | 18 | 7.97 | 3.12 |
| Yellow dots (n=69) | 4 | 18 | 6.99 | 2.64 |
| Broken hair (n=19) | 1 | 2 | 0.39 | 0.69 |
| Tapering hair (n=52) | 1 | 3 | 1.01 | 0.77 |
| Vellus hair (n=50) | 1 | 5 | 1.21 | 1.09 |

*Calculated for all the 70 cases; for absent cases score was taken as 0

As clear from table 3, percentage of area involved ranged from 5 to 45% with a mean value of 23.21±10.70. Black dots were seen in all the cases (100%) with a mean score of 7.97±3.12. Yellow dots were seen in 69/70 (98.6%) cases with a mean score of 6.99 ± 2.64. Broken hair was seen in 19/70 (27.1%) cases with a mean score of 0.39±0.69. Tapering hair were seen in 52/70 (74.3%) cases with a mean score of 1.01±0.77. Finally, vellus hair were seen in 50/70 (71.4%) cases with a mean score of 1.21±1.09.

At baseline level results reported in table 4, black dots were seen in 70 (100%) cases, yellow dots in 69 (98.6%), broken hair in 3 (4.3%), tapering hair in 37 (52.9%) and vellus hair in 69 (98.6%) cases. Mean values for black dots, yellow dots, broken hair, tapering hair and vellus hair were 4.60±2.50, 5.032.07, 0.04±0.20, 0.63±0.66 and 3.7± 1.44 respectively.

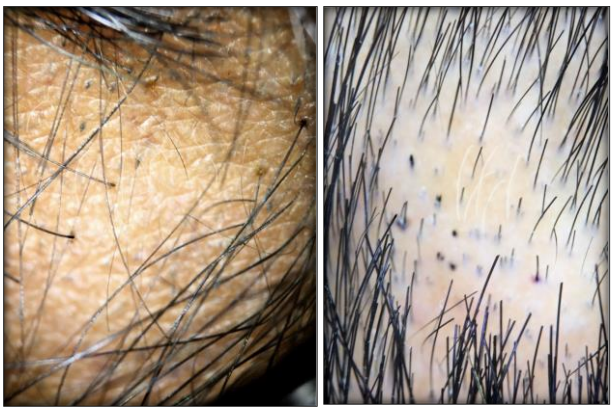

**Figure 2: Black dots and yellow dots.**

**Table 4: Dermoscopic findings at baseline (n=70).**

| Characteristic | Min | Max | Mean* | SD |
|---|---|---|---|---|
| Black dots (n=70) | 2 | 14 | 4.60 | 2.50 |
| Yellow dots (n=69) | 3 | 13 | 5.03 | 2.07 |
| Broken hair (n=3) | 1 | 1 | 0.04 | 0.20 |
| Tapering hair (n=37) | 1 | 2 | 0.63 | 0.66 |
| Vellus hair (n=69) | 2 | 9 | 3.73 | 1.44 |

*Calculated for all 70 cases; for absent cases score was taken as 0

At first follow up, from table 5 it is evident that all the cases (100%) had black dots, yellow dots and vellus hair. None had broken hair.

Tapering hair was seen in 34 (48%). Mean values for black dots, yellow dots, broken hair, tapering hair and vellus hair were 4.46±1.83, 2.44±1.41, 0±0, 0.50±0.50 and 5.03±1.17 respectively.

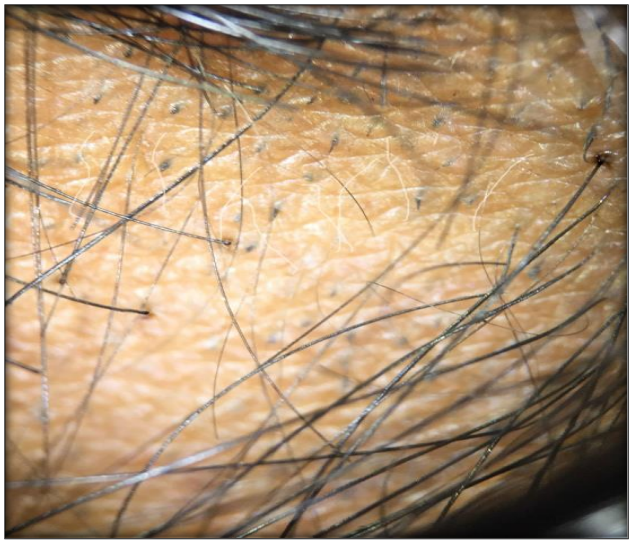

**Figure 3: Tapering hair.**

**Table 5: Dermoscopic findings at first follow up (n=70).**

| Characteristic | Min | Max | Mean | SD |
|---|---|---|---|---|
| Black dots (n=70) | 1 | 8 | 4.46 | 1.83 |
| Yellow dots (n=70) | 1 | 10 | 2.44 | 1.41 |
| Broken hair (n=0) | 0 | 0 | 0 | 0 |
| Tapering hair (n=34) | 1 | 1 | 0.50 | 0.50 |
| Vellus hair (n=70) | 2 | 8 | 5.03 | 1.17 |

At second follow up from table 6, all cases (100%) had yellow dots and vellus hair. None had broken hair or tapering hair. Black dots were seen in 68/70 (97.1%) patients. Mean values for black dots, yellow dots, broken hair, tapering hair and vellus hair were 1.9±0.78, 1.4±0.74, 0±0, 0±0 and 6.01±0.94 respectively.

**Table 6: Dermoscopic findings at second follow up (n=70).**

| Characteristic | Min | Max | Mean* | SD |
|---|---|---|---|---|
| Black dots (n=68) | 0 | 4 | 1.99 | 0.78 |
| Yellow dots (n=70) | 1 | 4 | 1.47 | 0.74 |
| Broken hair (n=0) | 0 | 0 | 0 | 0 |
| Tapering hair (n=0) | 0 | 0 | 0 | 0 |
| Vellus hair (n=70) | 4 | 8 | 6.01 | 0.94 |

*Calculated for all 70cases; for absent cases score was taken as 0

At third follow up in table 7, all cases (100%) had vellus hair. None had broken hair. One patient (1.4%) had tapering hair. Black dots were seen in 43 (61.4%) patients and yellow dots in 31 (44.3%) patients.Mean values for black dots, yellow dots, broken hair, tapering hair and vellus hair were 0.690.60, 0.5±0.63, 0 0, 0.01±0.12 and 6.19±0.94 respectively.

**Table 7: Dermoscopic findings at third follow up (n=70).**

| Characteristic | Min | Max | Mean* | SD |
|---|---|---|---|---|
| Black dots (n=44) | 0 | 3 | 0.69 | 0.60 |
| Yellow dots (n=33) | 0 | 2 | 0.54 | 0.63 |
| Broken hair (n=0) | 0 | 0 | 0.00 | 0.00 |
| Tapering hair (n=1) | 1 | 1 | 0.01 | 0.12 |
| Vellus hair (n=70) | 4 | 8 | 6.19 | 0.94 |

*Calculated for all70cases; for absent cases score was taken as 0

At fourth follow up in table 8, all cases (100%) had vellus hair. None had broken or tapering hair. Black dots were seen in 8/70 (11.4%) patients and yellow dots in 2/70 (2.9%) patients. Mean values for black dots, yellow dots, broken hair, tapering hair and vellus hair were 0.11±0.32, 0.03±0.17, 0±0, 0±0 and 3.47±0.93 respectively.

At fifth follow up in table 9, all cases (100%) had vellus hair. None had broken hair, or tapering hair. None of the patients had yellow dots. Black dots were seen in 3/70 (4.3%) patients. Mean values for black dots and vellus hair were 0.04±0.20 and 2.74±0.81 respectively.

**Table 8: Dermoscopic findings at fourth follow up (n=70).**

| Characteristic | Min | Max | Mean* | SD |
|---|---|---|---|---|
| Black dots (n=8) | 0 | 1 | 0.11 | 0.32 |
| Yellow dots (n=2) | 0 | 1 | 0.03 | 0.17 |
| Broken hair (n=0) | 0 | 0 | 0 | 0 |
| Tapering hair (n=0) | 0 | 0 | 0 | 0 |
| Vellus hair (n=70) | 2 | 8 | 3.47 | 0.93 |

*Calculated for all70 cases; for absent cases score was taken as 0

**Table 9: Dermoscopic findings at fifth Follow up (n=70).**

| Characteristic | Min | Max | Mean* | SD |
|---|---|---|---|---|
| Black dots (n=3) | 0 | 1 | 0.04 | 0.20 |
| Yellow dots (n=0) | 0 | 0 | 0 | 0 |
| Broken hair (n=0) | 0 | 0 | 0 | 0 |
| Tapering hair (n=0) | 0 | 0 | 0 | 0 |
| Vellus hair (n=70) | 2 | 6 | 2.74 | 0.81 |

*Calculated for all 70 cases; for absent cases score was taken as 0

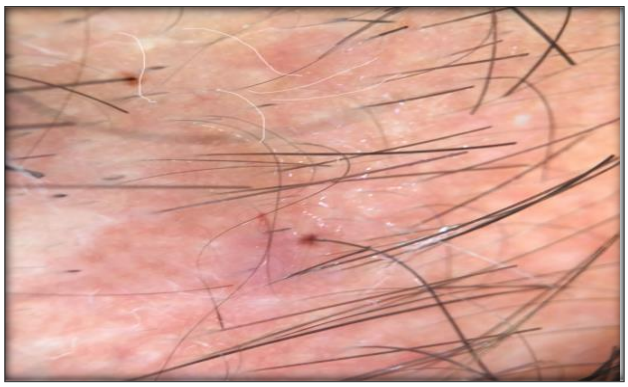

**Figure 4: Vellus hair and telangiectasia.**

In table 10, the trend of change in RGS was studied and it shows an increment with each follow up.

At first follow up, maximum number of patients had score 1 (72.9%). At second follow up, majority had score 2 (74.3%). At third follow up, majority had score 3 (71.4%). At fourth follow up, majority had score 3 and 4 (51.4% and 40.0%).

At fifth follow up, most patients had score 4 (58.6%) and at sixth follow up, majority had score 4 (60%). The targeted score of 4 was achieved by 8.6% of patients on third, 40% patients at fourth, 58.6% at fifth and 60% of patients at sixth follow up. On comparing the significance of change, for each subsequent follow up, the change was significant statistically ($p<0.05$).

Maximum change in mean score was observed between first and second and between second and third follow up intervals (0.89±0.32) while minimum change in mean score was observed between fifth and sixth follow ups (0.03±0.19).

**Table 10: Comparison of change in hair Re-growth Scores at different follow up intervals.**

| s.n. | Hair regrowth scores | First FU | | Second FU | | Third FU | | Fourth FU | | Fifth FU | | Sixth FU | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| 1. | Score 0 | 4 | 5.7 | 3 | 4.4 | 1 | 1.5 | 1 | 1.5 | 1 | 1.4 | 1 | 1.4 |
| 2. | Score 1 | 51 | 72.9 | 3 | 4.4 | 3 | 4.5 | 2 | 3.1 | 1 | 1.4 | 1 | 1.4 |
| 3. | Score 2 | 15 | 21.4 | 50 | 73.5 | 10 | 14.9 | 3 | 4.6 | 3 | 4.3 | 2 | 2.9 |
| 4. | Score 3 | 0 | 0 | 12 | 17.6 | 47 | 70.1 | 33 | 50.8 | 24 | 34.3 | 24 | 34.3 |
| 5. | Score 4 | 0 | 0 | 0 | 0 | 6 | 9.0 | 26 | 40.0 | 41 | 58.6 | 42 | 60.0 |
| 6. | Score 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mean Score±SD | | 1.16±0.50 | | 2.04±0.62 | | 2.81±0.71 | | 3.26±0.79 | | 3.47±0.78 | | 3.50±0.76 | |
| Signi-ficance between follow up changes (WSR test) | First FU | | | z=7.874; p<0.001 | | z=7.734; p<0.001 | | z=7.499; p<0.001 | | z=7.414; p<0.001 | | z=7.384; p<0.001 | |
| | Second FU | | | | | z=7.874; p<0.001 | | z=7.523; p<0.001 | | z=7.446; p<0.001 | | z=7.408; p<0.001 | |
| | Third FU | | | | | | | z=7.348; p<0.001 | | z=7.340; p<0.001 | | z=7.399; p<0.001 | |
| | Fourth FU | | | | | | | | | z=5.568; p<0.001 | | z=6.640; p<0.001 | |
| | Fifth FU | | | | | | | | | | | z=3.873; p<0.001 | |

**Table 11: Evaluation of qualitative change in dermoscopic finding at different follow ups.**

| Finding | Baseline | | First FU | | Second FU | | Third FU | | Fourth FU | | Fifth FU | | Sixth FU | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % | No. | % |
| Black dots | 70 | 100 | 70 | 100 | 70 | 100 | 68 | 97.1 | 44 | 62.9 | 8 | 11.4 | 3 | 4.3 |
| Yellow dots | 69 | 98.6 | 69 | 98.6 | 70 | 100 | 70 | 100 | 33 | 47.1 | 2.00 | 2.9 | 0.00 | 0.00 |
| Broken hair | 17 | 27.1 | 3 | 4.3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Tapering hair | 52 | 74.3 | 37 | 52.9 | 35 | 50.0 | 0.00 | 0.00 | 1.00 | 1.4 | 0.00 | 0.00 | 0.00 | 0.00 |
| Vellus hair | 50 | 71.4 | 79 | 98.6 | 70 | 100 | 70 | 100 | 70 | 100 | 70 | 100 | 70 | 100 |

**Table 12: Comparison of qualitative change in dermoscopic finding at different follow up.**

| Finding | Baseline vs first FU | | Baseline vs second FU | | Baseline vs third FU | | Baseline vs fourth FU | | Baseline vs fifth FU | | Baseline vs sixth FU | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | $\chi^2$ | P | $\chi^2$ | P | $\chi^2$ | p | $\chi^2$ | P | $\chi^2$ | P | $\chi^2$ | P |
| Black dots | 0.00 | 1.00 | 0.00 | 1.00 | 2.029 | 0.154 | 31.93 | <0.001 | 111.29 | <0.001 | 128.49 | <0.001 |
| Yellow dots | 0.00 | 1.00 | 1.007 | 0.316 | 1.007 | 0.316 | 46.81 | <0.001 | 128.28 | <0.001 | 136.06 | <0.001 |
| Broken hair | 11.43 | <0.001 | 19.35 | <0.001 | 19.35 | <0.001 | 19.35 | <0.001 | 19.35 | <0.001 | 19.35 | <0.001 |
| Tapering hair | 6.94 | 0.008 | 8.775 | 0.003 | 82.73 | <0.001 | 78.79 | <0.001 | 82.73 | <0.001 | 82.73 | <0.001 |
| Vellus hair | 20.22 | <0.001 | 23.33 | <0.001 | 23.33 | <0.001 | 23.33 | <0.001 | 23.33 | <0.001 | 23.33 | <0.001 |

As reported in table 11 and 12 below, black dots were seen in all cases at baseline, first and second follow up intervals. At third, fourth, fifth and sixth follow-ups, black dots were seen in 97.1%, 62.9% and 12.3% patients

respectively. On comparing the data statistically, the change from baseline was found to be significant statistically from fourth follow up onwards.

Yellow dots were seen in 98.6% patients at baseline and at first follow up interval. At second and third follow up intervals, all cases had yellow dots. However, at fourth follow up, 47.1% and at fifth follow up interval, 2.9% cases had yellow dots. At sixth follow up, none of the patients had yellow dots. Statistically, the change from baseline was significant from fourth follow up interval onwards.

Broken hair was seen in 27.1% cases at baseline and 4.3% cases at first follow up. From second follow up onwards, none of the cases had broken hair. Statistically, the change in status of broken hair as compared to baseline was significant from first follow up interval itself.

Tapering hair was seen in 74.3% cases at baseline, 52.9% cases at first follow up, 50% at second follow up and 1.5% cases at fourth follow up. None of the cases had tapering hair at third and fifth follow up intervals. As compared to baseline, the change in status of tapering hair was significant at all follow up intervals.

Vellus hair was seen in 71.4% cases at baseline and 98.6% cases at first follow up. At all the subsequent intervals, all the cases had vellus hair. As compared to baseline, the change in status of vellus hair was significant at all follow up intervals.

## DISCUSSION

Alopecia Areata is an autoimmune disease affecting almost 2% of the population throughout the world. Despite its benign nature and not being life-threatening, it is one of the major health issues as it has a significant impact on quality of life, especially the mental and social health of patients.[6,7] A number of treatment modalities for AA are available that include ILC, topical immunotherapy, topical corticosteroids, systemic corticosteroids, photochemotherapy, systemic immunosuppressants, photodynamic therapy, topical prostaglandins, laser therapy, calcineurin inhibitors, topical retinoids and biologics with varying success rates and acceptability.[13] Among these, use of ILC have been reported to be the most effective modality among adults.[13] Triamcinolone Acetonide is one of the most common corticosteroids used as an ILC to treat patients with AA. Various studies in the past have reported the use of intralesional triamcinolone acetonide for the treatment of AA, mainly reporting the treatment outcome as hair regrowth. This is a subjective criterion, as hair regrowth is only one of the parameters for assessment of improvement. AA clinically presents as a patchy loss of hair, accompanied by textural changes in scalp skin, hence ILC is a more appropriate method of evaluation that not only includes the end outcome in terms of hair regrowth but also provides a comprehensive account of therapeutic efficacy.

Dermoscopy is a method through which changes in dermal texture can be visualized and quantified. In the present study, an attempt was made to evaluate the treatment outcome of ILC (Triamcinolone Acetonide) using dermoscopic evaluation as the criteria for assessment in order to provide more objective results. For the purpose of this work, a total of 70 patients diagnosed with Alopecia Areata (AA) were enrolled in study. Age of patients ranged from 11 to 56 years. Overall, 87.1% patients were aged upto 40 years. Thus, the study group comprised primarily of youths. This is in accordance with the findings in literature that report almost 70% of patients of AA are aged upto 40 years.

In present study, majority of cases were females (58.6%). Although no gender predilection is reported in literature, a higher prevalence of females in our study could be attributed to higher emphasis on cosmetic aspect among females.[14] In present study, majority of patients were from rural areas (70%). The rural-urban proportions have been reported to vary in different studies. In a study on AA patients, Bhat et al found rural-urban ratio to be 0.79.[15] Rather et al, a study from Kashmir, reported rural urban ratio to be same as observed in our study (70%:30%).[16] The rural-urban differences might be dependent on the location and profile of healthcare facility. Our facility is located in a semi-urban area, and provides treatment at nominal token rates. Moreover, it is the only tertiary care facility that caters to nearly one-million rural population of Lucknow and adjoining districts. Hence, a relatively higher proportion of rural patients in our study can be attributed to the profile of our facility and does not reflect the difference in prevalence rates.

Most of the patients in present study were housewives and students. This might be probably owing to a higher proportion of females and younger age of patients. Although there are reports in literature regarding occupational alopecia, however, questions have been raised over existence of any such occupational relationship.[17-18] In fact, literature does not support any occupation related risk of AA.[19] In present study, the occupational profile of patients is in accordance with their general demographic profile and does not show any specific occupational predilection of disease.

The present study showed a positive family-history of AA in 22.9% of patients. This finding substantiates the proposition made by some authors who show it to have a genetic predisposition.[20] In present study, a total of 8 (11.4%) patients had past history of chronic illness/ hospitalization. AA is a non-infectious disease. However, in patients with chronic illnesses where autoimmune responses are impaired, there is high possibility of impact of chronic illness association with this autoimmune disorder.

In present study, majority of patients had only one bald patch (51.4%). However, a total of 28 (40%) patients had two bald patches. Ganjoo et, also reported a series, primarily of single bald patches.[21] In present study, none of the cases with more than 3 patches were enrolled. Moreover, a high proportion of patients with only one patch could also be attributed to the fact that in present study, we included only those patients who did not have a prior treatment history. Most of the patients with more than two or more patches generally have a treatment history and hence the high proportion of patients with only one bald patch as seen in present study could be justified. With respect to duration of illness too, in present study, majority of patients had the disease for not more than six months (71.5%) - which may again be attributed to the sampling frame of study.

Significant dermoscopic findings as well as hair RGS were observed from the first follow up itself. At first follow up, except for the presence of black and yellow dots, for all other findings, significant changes were observed from baseline. However, in terms of mean scores, for all dermoscopic findings, the change from baseline was statistically significant at first follow up itself.

Thus, the findings reflect that the impact of treatment could be measured within one month from the start of treatment. Early response to ILC has been reported in a number of studies. Kuldeepet al, reported hair regrowth within 3 weeks, while using intralesional Triamcinolone Acetonide.[22] Ganjooet al too in their study using dermoscopic evaluation reported regrowth of new vellus hair and disappearance of tapering hair within 4 weeks.[21] All these reports indicate that intralesional Triamcinolone Acetonide provides an early response and is consistent with the present study.

In present study, at all follow up intervals, a significant improvement in hair regrowth as observed by regrowth score and characteristic dermoscopic findings was observed, thus showing that the improvement was cumulative in nature. Categorical improvement as indicated by regrowth score 4 was visible from fourth follow up and by final follow up a total of 60% patients had achieved the targeted regrowth score of 4. Thus, categorical response to treatment in terms of defined objective goal of success was 60% in present study. These observations are close to the success rate of intralesional Triamcinolone Acetonide as reported by Porter and Burton who reported it to be successful in 64% of cases.[23] However, they did not report it in objective terms of growth scores. Kubeyinje obtained complete hair regrowth in 63% of their AA patients on monthly intralesional injection of Triamcinolone Acetonide within 4 months of treatment.[24] Chang et al, also reported a success rate of 60% among patients with extensive AA (>50%).[25] Although, in present study, all patients had AA of scalp area <50%, yet the success rate was only 60%. The reason for this might be the difference in objective criteria for deciding success rate and also on the number of cases enrolled in the study. Chang et al, had only 10 patients in their series and hence a higher consistency in their results could be expected despite a poor initial profile of patients.[25] Kuldeepet al, using almost the same inclusion and evaluation criteria as used in present study also obtained 60% success rate within 12 weeks of intralesional triamcinolone acetonide treatment.[22]

In another study, Ganjooet al, found achievement of RGS of 4 within 12 weeks in 28/60 (46.7%) of their patients receiving intralesional Triamcinolone Acetonide and 57/60 (95%) within 24 weeks of treatment.[21] Their findings thus indicate the cumulative effect of treatment with passage of time. A similar effect was also observed in our study with a progressive proportion of patients showing achievement of RGS of 4 at fourth (9%), fifth (40%) and sixth (60%) follow up intervals. Contrarily, using an evaluation criterion similar to ours, Kaur et al, reported a success rate of 35%, which might basically be attributed to the difference in duration of study (12 weeks compared to 24 weeks in present study).[26] Thus in general, the success rate in objective terms, as observed in present study was similar to that reported in previous studies and endorses the fact that intralesional Triamcinolone Acetonide provides a cumulative improvement with passage of time.

Lastly, in present study no substantial side effects of treatment were observed. Telangiectasia was the most common side effect reported in a maximum of 5 (7.5%) cases at fifth follow up which subsequently resolved. At the end of the study, 2 (3%) patients had telangiectasia and 3 (4.6%) had atrophy. In different studies reviewed by us too, no significant side effect of ILC therapy has been reported.[21,22,24,25,26]

Kuldeep et al, in their study reported mild pain and atrophy at injection sites.[22] However, in present study, keeping in view the transitional nature of pain at injection site, it was not recorded as a side effect and the incidence of atrophy was almost rare.

The findings of present study showed that intralesional Triamcinolone Acetonide is a useful treatment modality that is almost devoid of side effects and provides promising results with early response. The findings in present study thus endorsed the observations made by previous workers. More studies on comparative assessment and different treatment protocols are recommended.

## CONCLUSION

This study was carried out to dermoscopically study the effects of intralesional triamcinolone acetonide in the treatment of AA. For this purpose, a prospective interventional study was carried out in which a total of 70 patients of AA, aged 10 to 56 years (29 male, 41 female) with a mean age of 31.63±9.23 years were enrolled. None

of the patients had any particular occupational, dietary and chronic illness. Majority of patients were housewives (70%) from rural areas (70%). Baseline mean percentage area involved was 23.21±10.70. All the patients had black dots, 98.6% had yellow dots, 27.1% had broken hair, 74.3% had tapering hair and only 71.4% had vellus hair. From baseline to last follow up, proportion of patients with black dots reduced from 100% to 4.3%, yellow dots from 98.6% to 0%, broken hair from 17% to 0% and tapering hair from 74.3% to 0%. Vellus hair increased from 71.4% to 100%. Overall success rate in terms of achievement of Re-Growth Score 4 at last follow up was 60%.

On the basis of above findings, it could be concluded that intralesional Triamcinolone Acetonide was highly efficacious in treatment of AA. Significant dermoscopic changes were visible from first follow up itself, thus indicating that it can be used for the purpose of early clinical response and adverse effects. Further studies to corroborate the findings are recommended.

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