

## Efficacy of intralesional triamcinolone acetonide in alopecia areata by Dermojet at Abbasi Shaheed Hospital, Karachi, Pakistan

Yousuf A. Mallick, Naseema F. Kapadia, Maria Mansoor, Humaira Talat

Department of Dermatology, The Indus Hospital, Abbasi Shaheed Hospital & Karachi Medical and Dental College and Dow University of Health Sciences and Civil Hospital Karachi, Pakistan

**Objective:** To determine the efficacy of intralesional triamcinolone acetonide in alopecia areata by Dermojet.

**Methodology:** This study was a case series and conducted in Dermatology department, Abbasi Shaheed Hospital, Karachi, Pakistan from February 6, 2014 to August 6, 2014. Clinically diagnosed, 100 cases of alopecia areata aged 15 to 50 years were included via non probability consecutive sampling. Intralesional triamcinolone acetonide was given via Dermojet at monthly intervals for 3 months. The response was recorded at each visit by the appearance of hairs in alopecia patches. The efficacy was taken as positive if more than 50% of the patch showed growth of hairs with reduction in size of the patch,

as measured by Vernier Caliper.

**Results:** The mean age was  $30.84 \pm 9.97$  years (range 15 to 50). Out of 100 patients, 44 were male and 56 female. Only 19 patients had a positive family history. The mean duration of disease was  $6.88 \pm 4.90$  months. 86 patients had 1-3 patches and 14 patients had 4-6 patches while mean size of the patch was  $4.33 \pm 1.72$  cm. 75 patients achieved efficacy and 25 patients did not.

**Conclusion:** The efficacy of intralesional triamcinolone acetonide in alopecia areata patches via Dermojet device was high. It may be utilized in future for treatment of alopecia areata. (Rawal Med J 201;43:227-230).

**Key words:** Alopecia areata, triamcinolone acetonide, intralesional, Dermojet, efficacy.

## INTRODUCTION

Alopecia areata (AA) is a common autoimmune disease that presents as non-scarring hair loss.<sup>1</sup> It usually affects the scalp but any hair bearing area can be involved.<sup>2</sup> It affects males and females equally.<sup>2,3</sup> Lesions of alopecia areata are well demarcated, round or oval, smooth-surfaced, completely bald patches of variable sizes with usually normal skin within the patch.<sup>1</sup> In the USA, the life time risk for alopecia areata was estimated to be 1.7%.<sup>4,5</sup> The incidence in Asians was found to be 3.8% in a Singapore study<sup>6</sup> and more than 80% of the patients presented in first four decades of life.<sup>6,7</sup> Alopecia areata is a lymphocyte cell-mediated inflammatory process of hair loss having an autoimmune aetiopathogenesis.<sup>1,2</sup> Several environmental factors and genetic predisposition play their role.<sup>1,8</sup> The disfiguring appearance of patches has negative impact on patients' social and working life and are also a cause of significant psychiatric comorbidities especially depression, anxiety and mood disturbance.<sup>12,13</sup>

A large number of topical, intralesional and systemic therapeutic modalities are present for the treatment. Commonly used are topical, intralesional and systemic steroids, topical minoxidil 5% and anthralin 0.5% to 1% cream,<sup>9,10</sup> topical immunotherapy [squaric acid dibutylester (SADBE) and diphenylcyclopropenone (DPCP)].<sup>11</sup> Others include photochemotherapy, excimer laser and systemic therapy with cyclosporine, methotrexate, sulfasalazine.<sup>9</sup> By far the commonest and first line therapy for AA is intralesional corticosteroids (ILC)<sup>9,14</sup> and the preferable steroid for this purpose is triamcinolone acetonide.<sup>6,9,14</sup> ILC are most suitable for patchy, relatively stable hair loss of limited extent.<sup>11</sup>

The most common and problematic side effect is skin atrophy.<sup>2,9,14</sup> This can be minimized by the use of a needleless device called Dermojet which can deliver ILC in a fixed quantity and controlled manner. Dermojet was first used by Abell and Munro in 1973 for treating AA with an efficacy of 62%.<sup>15</sup> Data on our population is not available.

Therefore, this study was designed to assess the efficacy of ILC via Dermojet.

## METHODOLOGY

This study was conducted in Department of Dermatology, Abbasi Shaheed Hospital from February 6, 2014 to August 6, 2014 via non probability consecutive sampling technique. The required sample size came out to be 91 by using WHO Software, by taking the prevalence of 62%, margin of error is 10% and confidence interval of 95%.<sup>15</sup> Clinically diagnosed, untreated patients with AA for last 3 months of either gender, 15 to 50 years of age, having 1 to 5 patches and size of less than or equal to 10 x 10 cm were selected for the study after informed consent. Patients with extensive scalp involvement, comorbidities, under treatment for AA, pregnant and lactating mothers were excluded.

**Fig. 1. Dermojet.**



Intralesional triamcinolone acetonide was given via Dermojet (Fig. 1) at monthly intervals for 3 months. It was used in strength of 10 mg/ml. Dermojet delivers painless intradermal injections of 0.1 ml per shot by a high velocity liquid jet which penetrates the skin to a depth of 2 to 5 mm and produces a weal of up to 6 mm diameter. Patients were asked for regular follow up for 3 months. During each visit, the response was recorded by appearance of hairs in patches and also confirmed by comparing photographs before and after each treatment visit. The efficacy was taken as positive if more than 50% of the patch showed growth of hairs with reduction in size of the patch measured by Vernier Caliper. Data were analyzed using SPSS version 13.0. Chi-

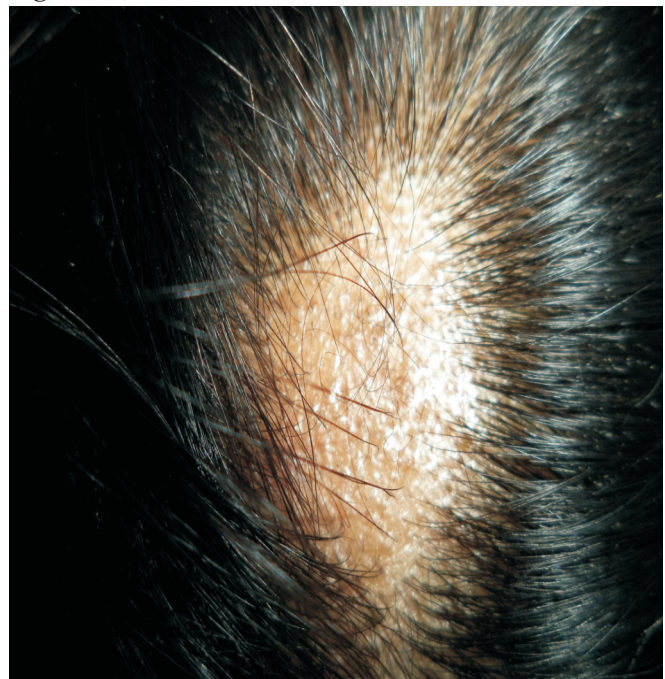
Square was applied.  $P < 0.05$  was considered as significant.

## RESULTS

Out of 100 patients, 44 (44%) were male and 56 (56%) were female. Age was 15 to 50 years (Mean  $30.84 \pm 9.97$ ). Mean duration of disease was  $6.88 \pm 4.90$  months. Mean size of patch was  $4.33 \pm 1.72$  cm. Out of 100 patients, 86 (86%) patients had 1-3 patches and 14 (14%) patients had 4-6 patches.

Only 19 (19%) patients had a positive family history. Out of 100 patients, 75 (75%) patients achieved efficacy (Fig. 2 and 3) and 25 (25%) patients did not achieve efficacy. Stratification for age with respect to efficacy showed that 27 (69.2%), 21 (84%), 23 (74.2%) and 04 (80%) in age group 15-25, 26-35, 36-45, 46-55 achieved efficacy, respectively. Whereas, 12 (30.8%), 04 (16%), 08 (25.8%) and 01 (20%) in age group 15-25, 26-35, 36-45, 46-55 did not achieve efficacy respectively ( $P=0.60$ ). Stratification for gender with respect to efficacy showed that 35 (79.5%) and 09 (20.5%) achieved and did not achieve efficacy in the males whereas 40 (71.4%) and 16 (28.6%) achieved and did not achieve efficacy in the females ( $P=0.35$ ).

**Fig. 2. Before treatment.**



**Fig. 3. After treatment.**

Stratification for duration of disease with respect to efficacy showed that out of 70 patients with the duration of disease 1-6 months; 55 (78.6%) achieved efficacy and 15 (21.4%) did not achieve efficacy. Moreover, out of 17 patients with the duration of disease 7-12 months; 12 (70.6%) achieved efficacy and 05 (29.4%) did not achieve efficacy. Furthermore, out of 08 patients with the duration of disease 13-18 months; 04 (50%) achieved efficacy and 04 (50%) did not achieve efficacy. Finally, out of 05 patients with the duration of disease 19-24 months; 04 (80%) achieved efficacy and 01 (20%) did not achieve efficacy ( $P=0.33$ ).

Stratification for family history with respect to efficacy showed that 12 (63.2%) and 07 (36.8%) achieved and did not achieve efficacy in patients with family history, respectively. Whereas, 63 (77.8%) and 18 (22.2%) achieved and did not achieve efficacy in the patients with no family history respectively ( $P=0.18$ ). Stratification for number of patch with respect to efficacy showed that 63 (73.3%) and 23 (26.7%) who had 1-3 patches achieved and did not achieve efficacy respectively. Whereas, 12 (85.7%) and 02 (14.3%) who had 4-6 patches achieved and did not achieve efficacy, respectively ( $P=0.31$ ). Stratification for size of

patch with respect to efficacy showed that 11 (84.6%), 54 (76.1%), 08 (61.5%) and 02 (66.7%) in size of patch group 1-3, 4-6, 7-9, 10-12 cm achieved efficacy respectively. Whereas 02 (15.4%), 17 (23.9%), 05 (38.5%) and 01 (33.3%) in size of patch group 1-3, 4-6, 7-9, 10-12 cm did not achieve efficacy, respectively ( $P=0.56$ ).

## DISCUSSION

Although AA is a benign condition and most patients are asymptomatic, but it can cause emotional and psychosocial disturbances. Corticosteroids are the most popular treatment for this disease. Intralesional corticosteroids preferably triamcinolone acetonide is the first-line therapy for adult patients with less than 50% of scalp involvement. Age distribution showed that most of the patients were between 15 to 45 years with the maximum 39 (39%) in 15 to 25 years. Pediatric AA constitutes approximately 20% of AA cases,<sup>16</sup> and as many as 60% of patients with AA present with their first patch before 20 years of age.<sup>17</sup> A study from Singapore suggested that 85.5% of Asian patients with AA have disease onset before 40 years of age.<sup>6</sup> The disease prevalence peaks between the second and fourth decades of life.<sup>4</sup>

Our study revealed that 44 (44%) were male and 56 (56%) were female. 70 (70%), 17 (17%), 08 (08%) and 05 (05%) patients had the disease for 1-6 months, 7-12 months, 13-18 months and 19-24 months respectively. Ejaz et al found similar results and found that 47 (56.6%) had the disease for < 6 months.<sup>18</sup> In our study, 86 (86%) patients had 1 to 3 patches and 71 (71%) had size between 4 to 6 cm. 19% of our patients were found to have a positive family history. Ejaz et al found family history of AA in 12.1% of patients<sup>18</sup> and Ahmed et al in 14.5% of patients.<sup>19</sup>

Out of 100 patients, 75 (75%) patients achieved efficacy and 25 (25%) patients did not. Majority of efficacy was achieved in 21 (84%) patients in 26 to 35 years' age group, 55 (78.6%) patients with duration of disease 1 to 6 months. Frentz found the efficacy to be 50%,<sup>20</sup> Narahari 84%,<sup>21</sup> Kuldeep et al 60%,<sup>22</sup> Porter et al 97%,<sup>23</sup> and Abell and Munro found it to be 62%.<sup>15</sup> Our findings are in accordance with the above studies and on the basis of its high

efficacy, this method of injecting ILC via Dermojet device is recommended in the future for treatment of alopecia areata.

## CONCLUSION

Intralesional triamcinolone acetonide with Dermojet device was a safe and effective treatment for patients with alopecia areata. We had 75% efficacy in our study. Thus, this method may be utilized more in future for alopecia areata cases.

### Author Contributions:

Conception and design: Naseema F. Kapadia, Yousuf A. Mallick  
Collection and assembly of data: Yousuf A. Mallick, Naseema F. Kapadia, Maria Mansoor, Humaira Tala  
Analysis and interpretation of the data: Yousuf A. Mallick, Maria Mansoor

Drafting of the article: Yousuf A. Mallick

Critical revision of the article for important intellectual content: Yousuf A. Mallick

Statistical expertise: Yousuf A. Mallick, Maria Mansoor

Final approval and guarantor of the article: Yousuf A. Mallick

**Corresponding author email:** Yousuf A. Mallick:

youmay2006@gmail.com

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## REFERENCES

- Alkhalifah A, Alsantali A, Wang E, McElwee KJ, Shapiro J. Alopecia areata update: part I. Clinical picture, histopathology, and pathogenesis. *J Am Acad Dermatol* 2010;62:17788.
- Alkhalifah A. Topical and intralesional therapies for alopecia areata. *Dermatologic Therapy* 2011;24:355-63.
- Wasserman D, Guzman-Sanchez DA, Scott K, McMichael A. Alopecia areata. *Int J Dermatol* 2007;46:121-31
- Messenger AG, de Berker DAR, Sinclair RD. Disorders of Hair. In: Burns T, Breathnach S, Cox N, Griffiths C, editors. *Rook's textbook of dermatology*. Vol 4. 8th ed Oxford: Wiley-Blackwell; 2010 p. 66.1-66.100.
- Mirzoyev S, Davis M, Torgerson R. Incidence of alopecia areata in Olmsted County, Minnesota, 1990-2009. *J Am Acad Dermatol* 2013;68(Supplement 1):AB106.
- Tan E, Tay YK, Goh CL, Giam YC. The pattern and profile of alopecia areata in Singapore a study of 219 Asians. *Int J Dermatol* 2002;41:748-53.
- Sharma VK, Dawn G, Kumar B. Profile of alopecia areata in Northern India. *Int J Dermatol* 1996;35:22-7.
- Lu W, Shapiro J, Yu M, Barekatin A, Lo B, Finner A, et al. Alopecia areata: pathogenesis and potential for therapy. *Expert Rev Mol Med* 2006;8:1-19.
- Alkhalifah A, Alsantali A, Wang E, McElwee KJ, Shapiro J. Alopecia areata update: part II. Treatment. *J Am Acad Dermatol* 2010;62:191-202.
- Dombrowski NC, Bergfeld WF. Alopecia areata: what to expect from current treatments. *Clev Clin J Med* 2005;72:758-67.
- Garg S, Messenger AG. Alopecia Areata: evidence-based treatments. *Semin Cutan Med Surg* 2009;28:15-8.
- Chu SY, Chen YJ, Tseng WC, Lin MW, Chen TJ, Hwang CY, et al. Psychiatric comorbidities in patients with alopecia areata in Taiwan: a case-control study. *Br J Dermatol* 2012;166:525-31.
- Alfani S, Antinone V, Mozzetta A, Di Pietro C, Mazzanti C, Stella P, et al. Psychological status of patients with alopecia areata. *Acta Derm Venereol* 2012;92:304-6.
- Kumaresan M. Intralesional Steroids for Alopecia Areata. *Int J Trichology* 2010;2:635.
- Abell E, Munro DD. Intralesional treatment of alopecia areata with triamcinolone acetonide by jet injector. *Br J Dermatol* 1973;88:55-9.
- Nanda A, Al-Fouzan AS, Al-Hasawi F. Alopecia areata in children: a clinical profile. *Pediatr Dermatol* 2002;19:482-5.
- Price VH. Alopecia areata: clinical aspects. *J Invest Dermatol* 1991;96:68S.
- Ejaz A, Jameel K, Suhail M. Pattern and profile of alopecia areata in Pakistan. *J Pak Asso Derm* 2009;19:136-40.
- Ahmed EF, Abdelgawad MM, Fathi H, Elbayoumi Y. Alopecia areata in Egypt: clinical features and associations. *Gulf J Dermatol Venereol* 2012;19:29-34.
- Frentz G. Topical treatment of extended alopecia. Intralesional steroid--Kromayer lamp. *Dermatologica* 1977;155:14754.
- Narahari SR. Comparative efficacy of topical anthralin and intralesional triamcinolone in the treatment of alopecia areata. *Indian J Dermatol Venereol Leprol* 1996;62:34850.
- Kuldeep C, Singhal H, Khare AK, Mittal A, Gupta LK, Garg A. Randomized comparison of topical betamethasone valerate foam, intralesional triamcinolone acetonide and tacrolimus ointment in management of localized alopecia areata. *Int J Trichology* 2011;3:204.
- Porter D, Burton JL. A comparison of intra-lesional triamcinolone hexacetonide and triamcinolone acetonide in alopecia areata. *Br J Dermatol* 1971;85:2723.