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Efficacy and Safety of Intralesional Triamcinolone Acetonide Injection in The Treatment of Alopecia Areata

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ABSTRACT

Background: Alopecia areata (AA) is a chronic, immune mediated inflammatory disorder of anagen hair follicles leading to relapsing, nonscarring hair loss. Many therapies are available for the treatment of AA, including topical, systemic, and injectable modalities however, these treatment methods produce variable clinical outcomes and there are no currently available treatments that induce and sustain remission. Intralesional injection of corticosteroids (ILCs) is considered relatively simple, effective, and minimally invasive.

Objective: The aim of the work was to investigate the efficacy and safety of intralesional Triamcinolone acetonide injection in the treatment of AA.

Patients and methods: Thirty-six patients suffering from AA were included in the study. All patients were subjected to complete history taking, general examination and dermatological examination for evaluation of site, size of the patches and type of Alopecia. Confirmation of diagnosis was done by dermoscopy. Evaluation of severity of the disease using SALT scoring system was done. After that, all the patients were treated by ILCs (Triamcinolone acetonide). 5 mg/ml of Triamcinolone acetonide was injected and the Injections were repeated every 4 weeks. Patients were assessed clinically at baseline and every month till the end of the sessions and were asked about their satisfaction on hair growth. Side effects were also monitored every session during and after injection.

Results: Hair growth after Intralesional Triamcinolone Acetonide treatment ranged from 0 to 5. 5.6% of patients showed excellent response, 5.6% showed very good response, 55.6% showed good response, 5.6% showed moderate response, 16.7% showed mild response while four patients showed poor response. Side effects were minimal like pain and atrophy (11.1%).

Conclusion: Intralesional Triamcinolone acetonide injection is safe and effective in the treatment of alopecia areata.

Keywords: Alopecia areata, Triamcinolone acetonide, Intralesional corticosteroids, SALT scoring

INTRODUCTION

Alopecia areata (AA) is a chronic, immune mediated inflammatory disorder of anagen hair follicles leading to relapsing, nonscarring hair loss. It is commonly presented by localized patches of hair loss on the scalp (alopecia focalis). More extensive forms can lead to diffuse hair loss throughout the entire body, including the eye lashes and eyebrows (alopecia universalis (AU)). AA is a common disease that affects approximately 0.1-0.2% of all population. It affects children, men, and women of all hair colors and the highest prevalence is seen between the second and fourth decades of life [(1)]. A hallmark of active AA is the presence of lymphocytes around the bulb region of anagen hair follicles [(2)].

Evidence for the involvement of both innate and acquired immunity in the pathogenesis of alopecia areata has been found [(3)]. Multiple therapies are available for the treatment of AA, including topical, systemic, and injectable modalities. However, these treatment methods produce variable clinical outcomes and there is no currently available treatment that induces and maintains remission [(4)]. Intralesional injection of corticosteroids (ILCs) is considered relatively simple, effective, and minimally invasive. This route transposes the epidermal barrier to deliver the drug directly into the area. Thus, it minimizes the adverse effects related to systemic corticosteroid therapy. In addition, penetration of the drug is more expressive compared to the topical route [(5)]. Triamcinolone acetonide is the most widely used injectable corticosteroid, with several studies proving its efficacy. It is thought that ILCs act in AA by inhibition of the T cell mediated attack on the hair follicle [(6)]. The efficacy of ILCs is variable depending on the patient population treated. It is the first-line therapy for adult patients with less than 50% of scalp involvement. Concentrations of 2.5 to 10 mg/mL may be used, but 5 mg/mL is the preferred concentration for scalp. For the eyebrows and face, 2.5 mg/mL can be used [(2)]. The common adverse effects during ILCs therapy are pain, atrophy of skin and hair follicles, telangiectasia, hypo / depigmentation and cushingoid features. It may occur due to systemic absorption [(7)].

The aim of this study was to investigate the efficacy and safety of intralesional Triamcinolone acetonide injection in the treatment of AA.

PATIENTS AND METHODS

This clinical trial study included a total of 36 patients suffering from alopecia areata, attending at Department of Dermatology, Venereology and Andrology, Zagazig University Hospitals.

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Inclusion criteria included patients of both sexes and age more than ten years old complaining of AA. Patients who were diagnosed clinically and by dermoscopy for less than 1 year duration and those with no treatment for AA in the last month were also included.

Exclusion criteria included other causes of hair loss like androgenic alopecia and Telogen effluvium, hair loss secondary to systemic diseases as thyroid dysfunction, SLE, renal and hepatic failure, age < 10 years, pregnancy or lactation and Immunocompromised patients.

All patients were subjected to complete history taking, general examination to exclude systemic causes of hair loss and dermatological examination for evaluation of site, size of the patches and type of alopecia. Confirmation of diagnosis was done by dermoscopy. Evaluation of severity of the disease was done using SALT scoring system. The scalp was divided into four areas: vertex – 40% (0.4) of scalp surface area; right profile of scalp – 18% (0.18) of scalp surface area; left profile of scalp – 18% (0.18) of scalp surface area and posterior aspect of scalp –24% (0.24) of scalp surface area. Percentage of hair loss in any of these areas is percentage of hair loss multiplied by percent surface area of the scalp in that area. SALT score is the sum of percentage of hair loss in all above mentioned areas [(8)].

After that, all the patients were treated by ILCs (Triamcinolone acetonide). 5 mg/ml of Triamcinolone acetonide was injected at 1 cm intervals with 0.1 ml on each site. The maximum of 3ml was injected in each visit using 0.5 inch long, 30 gauge needle, fitted to an insulin syringe. Injections were repeated every 4 weeks [(9)].

Patients were assessed clinically at baseline and every month till the end of the sessions. Patients were asked about their satisfaction on hair growth and graded as follow: 0 for unsatisfied patients, 1 for moderately satisfied and 2 for well satisfied patients. Side effects were monitored every session during and after injection as pain, bleeding, hematoma, ecchymosis, allergic reactions, hair follicles telangiectasia, hypo pigmentation, cushingoid features and atrophy of skin.

Ethical consideration:

Approval for the study was obtained from Zagazig University Institutional Review Board (IRB). The study was performed in compliance with the World Medical Association Code of Ethics (Decleration of Helsinki) for research involving humans.

Statistical analysis

All data were collected, tabulated and statistically analyzed using SPSS 22.0 for windows (IBM Inc., Chicago, IL, USA). Continuous Quantitative data were expressed as the mean± SD & median (range) and categorical qualitative variables were expressed as absolute frequencies (number) & relative frequencies (percentage). P value < 0.05 was considered significant.

RESULTS

The age of the patients ranged from 10 to 54 years with a mean 24.72±12.86 years. 66.7% of them were males and only two patients (5.6%) had family history of AA. Disease duration per years ranged from 5 to 48 months; with a mean 20±15.2 months. Patient's SALT score ranged from 12 to 100 with a mean 54.54±32.79, pull test discriminate that (66.7%) of patients had active progressive course while, 33.3% of them had stable course as demonstrated in **table 1**.

There were 12 patients (33.3%) had AA at the occipital region of the scalp , 8 patients (22.2%) had alopecia areata at temporal and occipital regions of the scalp, 4 patients (11.1%) had alopecia areata at frontal region of the scalp, 2 patients (5.6%) affected at other sites as well as; 8 patients (22.2%) alopecia areata involved almost all the scalp and 8 patients (22.2%) alopecia areata involved one large area, 6 patients (16.7%) alopecia areata involved two large area. 4 patients (11.1%) alopecia areata involved four patches. The same number of patients had multiple large patches. Regarding side effects, all studied patients (100.0%) complaint from pain and 4 patients suffered from atropy (11.1%) as in **figure 1**. Hair growth after intralesional Triamcinolone acetonide treatment ranged from 0 to 5 with median 3 hairs as can be seen in **table 2**. Regarding the treatment response, two patients (5.6%) showed excellent response, two (5.6%) showed very good response, twenty patients (55.6%) showed good response, two patients showed moderate response, six patients (16.7%) showed mild response while four patients showed poor response. Regarding patient satisfaction, four patients (11.1%) were very satisfied, twenty six patients (72.2%) were somewhat satisfied, four patients were neither satisfied nor dissatisfied and two patients (5.6%) were dissatisfied.

Table (1): Demographic and clinical data of the studied patients (n=36)

	Mean± SD	Median (range)
Age (years)	24.72±12.86	23.5 (10-54)
Disease duration (months)	20±15.2	12 (5-48)
SALT score	54.54±32.79	12-100
	No	**%**
Sex		
• Female	12	33.3
• Males	24	66.7
Family history of disease		
• Yes	2	5.6
• No	34	94.4
Activity (after pull test)		
• Active progressive course	24	66.7
• Stable	12	33.3

Table (2): Assessment of hair growth after intralesional Triamcinolone acetonide treatment.

Assessment of hair growth	Intralesional Triamcinolone acetonide
Mean ±SD	2.44±1.32
Median	3
Range	(0-5)

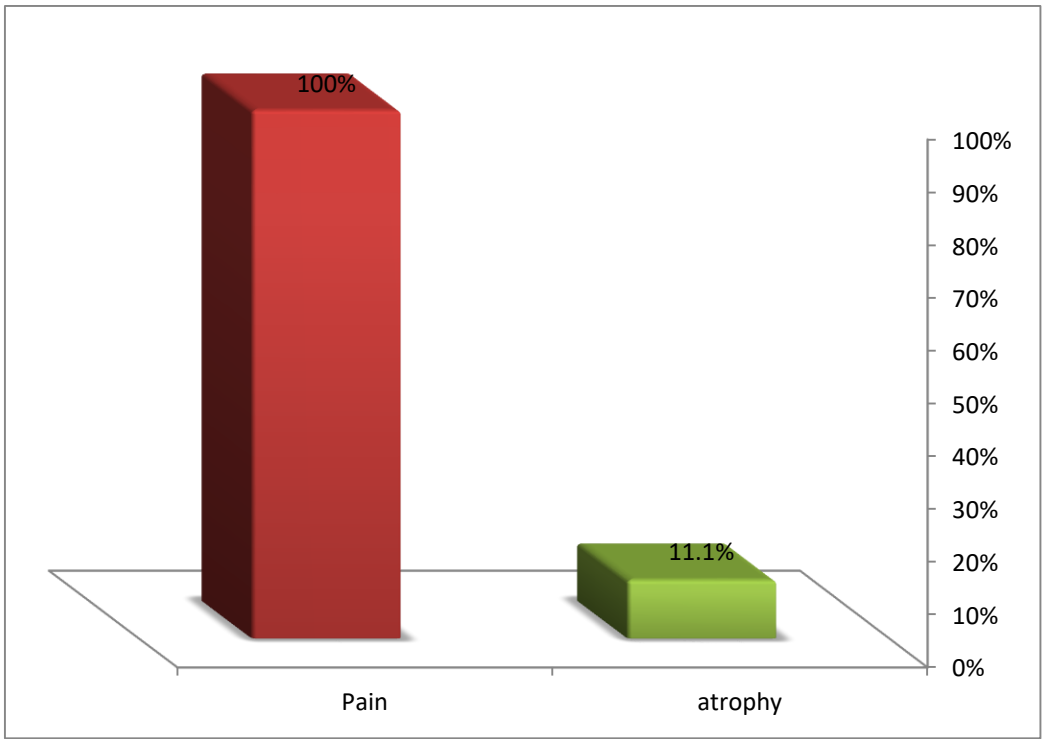

Figure (1): Side effects of intralesional Triamcinolone acetonide in the treatment of alopecia areata.

DISCUSSION

Multiple therapies are available for the treatment of AA, including topical, systemic, and injectable modalities but these treatment modalities produce variable clinical outcomes and there is no currently available treatment that induces and maintains remission [(4)].

AA is commonly treated with topical, intralesional or systemic corticosteroids, topical irritants such as anthralin and diphencyprone (DPC), sensitizing agents and psoralen plus ultraviolet light A radiation (PUVA). Topical and intralesional steroids are used in mild cases and systemic steroids are used in severe cases. Immunomodulating agents and immunosuppressants comprise other treatment options reserved for severe cases of AA. All of these therapeutic modalities are employed with the hopes of diminishing the hyperactive immune response of T cells against hair follicles; however, the rate of hair loss recurrence remains relatively high despite their usage [(10)].

In this study we utilized Triamcinolone acetonide in the treatment of AA. Steroids with low solubility are preferred because of their slow absorption from the injection site which promotes maximum local action with minimal systemic effect. Immunosuppression is the main mechanism of action. Corticosteroids can suppress the T-cell-mediated immune attack on the hair follicle. Corticosteroids preparations used include triamcinolone acetonide, triamcinolone hexacetonide, and hydrocortisone acetate. Triamcinolone acetonide is the preferred intralesional product because it is less atrophogenic than others [(11)].

Regarding the treatment response, our results was consistent with **Porter and Burton** [(12)] who reported that hair regrowth was possible in 64 (97%) of AA sites treated by intralesional injections of Triamcinolone acetinoide.

Another uncontrolled study of 62 patients with AA on monthly intralesional injection of Triamcinolone acetonide showed complete regrowth in 40 (63%) patients at 4 months which was also consistent with our study [(2)]. Our study was also similar to **Metwally *et al.*** [(13)], in which thirty patients treated by carboxy therapy, intraregional steroids and both combined. In the area treated by Intralesional corticosteroids, 20 patients (69.5%) reported their improvement as excellent; ten patients (30.5%) reported it as moderate.

In the present study, all studied patients under treatment by intralesional Triamcinolone acetonide complaint from pain, 4 patients (11.1%) suffered from atropy but 72.2% of patients were somewhat satisfied which may reflect that the treatment was well tolerated. In some patients, pain was minimized by use of a topical anesthetic agent applied under occlusion prior to the visit.

CONCLUSION

It could be concluded that intralesional Triamcinolone acetonide is safe and effective in the treatment of alopecia areata.

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