ID Design Press, Skopje, Republic of Macedonia
Open Access Macedonian Journal of Medical Sciences. 2019 Jan 30; 7(2):275-278.
Special Issue: Vietnamese Dermatology
https://doi.org/10.3889/oamjms.2019.093
eISSN: 1857-9655
Clinical Science

Successful Treatment of Intralesional Triamcilonon Acetonide Injection in Keloid Patients

Nghi Dinh Huu[1], Sau Nguyen Huu[1], Xuan Le Thi[1], Thuong Nguyen Van[1,2], Phuong Pham Thi Minh[1], Trang Trinh Minh[1], Tam Hoang Van[1], Van Tran Cam[1], My Le Huyen[1], Khang Tran Hau[1], Marco Gandolfi[3*], Francesca Satolli[3], Claudio Feliciani[3], Michael Tirant[4,5], Aleksandra Vojvodic[6], Torello Lotti[4]

[1]National Hospital of Dermatology and Venereology, Hanoi, Vietnam; [2]Hanoi Medical University, Hanoi, Vietnam; [3]Unit of Dermatology, University of Parma, Parma, Italy; [4]University of Rome G. Marconi, Rome, Italy; [5]Psoriasis Eczema Clinic, Melbourne, Australia; [6]Department of Dermatology and Venereology, Military Medical Academy of Belgrade, Belgrade, Serbia

Citation: Dinh Huu N, Nguyen Huu S, Le Thi X, Van TN, Thi Minh PP, Trinh Minh T, Hoang Van T, Tran Cam V, Le Huyen M, Tran Hau K, Gandolfi M, Satolli F, Feliciani C, Tirant T, Vojvodic A, Lotti T. Successful Treatment of Intralesional Triamcinolone Acetonide Injection in Keloid Patients. Open Access Maced J Med Sci. 2019 Jan 30; 7(2):275-278. https://doi.org/10.3889/oamjms.2019.093

Keywords: Keloid; Triamcinolone acetonide

***Correspondence:** Marco Gandolfi. Unit of Dermatology, University of Parma, Parma, Italy. E-mail: marco.gandolfi5@gmail.com

Received: 02-Jan-2019; **Revised:** 16-Jan-2019; **Accepted:** 17-Jan-2019; **Online first:** 28-Jan-2019

Funding: This research did not receive any financial support

Competing Interests: The authors have declared that no competing interests exist

Abstract

AIM: Evaluation the effect of intralesional corticosteroid injection on keloid, at the National Hospital of Dermatology and Venereology from 1/2009 to 12/2009.

METHODS: A group of 65 patients with keloid were randomly assigned into three groups. In the studied group, 33 patients were intralesionally injected 7.5 mg/1 cm^2 of TCA. In the control group, TAC 32 patients were intralesionally injected 15 mg/1 cm^2 of TCA. The result was evaluated basing on the criteria of Henderson (1998) and El-Tonsy (1996).

RESULTS: In comparison between 2 groups, good to excellent improvement in the studied group was statistically higher than the control group (90.7% versus 68.7%; $p < 0.05$). After each injection, the thickness of the scar was reduced 1.24 ± 0.53 mm in the studied group and 0.81 ± 0.39 mm in the control group. The disappearance of pain and itching after treatment were 86.6% and 95.5% in the studied group and 78.1% and 80% in the control group ($p > 0.05$). Ulceration, acne and troublesome with menstrual cycles were sometimes were noted more frequently in the control group than in the studied group.

CONCLUSION: Intralesional triamcinolone acetonide injection had a good result, and 7.5 mg/1 cm^2 scar is the best dose for treatment of keloid.

Introduction

Keloid is a benign condition of the skin caused by excessive deposition of fibrous cells and collagen fibres in the body. It occurs at all ages, both sexes and all races. Blacks have the highest rates of keloid, followed by yellow and white.

In recent years, thanks to advances in molecular biology, the pathogenesis of keloids and hypertrophic scars has been clarified. Particularly, fibroblast growth factor (FGF) and transforming growth factor-beta (TGF-β) play a pivotal role in the development of scars [1], [2].

Although there are many different treatments of keloids nowadays, such as surgical excision, laser, cryotherapy, radiotherapy, silicone gel, corticosteroid injection. PDT, however, each method has its advantages and disadvantages, and the results also vary depending on each study [3]. Injections of corticosteroids have also been introduced in Vietnam. However, up to now, there have been no studies about the doses, effects and the unwanted effects of keloids treatment with Triamcinolone injections.

We aimed evaluation the effect of intralesional corticosteroid injection on keloid, at the National Hospital of Dermatology and Venereology from 1/2009 to 12/2009.

Methods

An open clinical trial (self-comparison before and after treatment) on 65 patients with keloids was conducted at the Department of Laser and Surgical of Dermatology Central Hospital of Vietnam from January 2009 to December 2009.

Included 65 patients were randomised into 2 equal groups: a studied group of 33 patients received TAC injection with a dose of 7.5 mg/1 cm^2 scars acreage and control group of 32 patients received TAC injection with a dose of 15 mg/1 cm^2 scars acreage.

Patients are given repeated doses every 4 weeks, and totally does not exceed 60 mg/each time. Average treatment times 4-6 times.

Evaluation of treatment outcome: Based on clinical evaluation criteria of Henderson (1998) and El-Tonsy (1996) [4].

- Flat scars: 1 point.
- Soft scars (equivalent to surrounding normal skin): 1 point.
- Bright colour scars (equivalent to surrounding normal skin colour): 1 point.
- No functional symptoms (itching, pain): 1 point.
- No recurrence: 3 points.
- Recurrence on a small acreage of scar: 1 point.
- Recurrence on a large scale: 0 points.
- No side effects: 3 points.
- Side effects do not stop treatment: 1 point.
- Side effects stop treatment: 0 points.
- The maximum score is 10 points; minimum is 0 points.

Evaluate treatment results in three levels: Good at 9-10 points, Quite good at 7-8 points and Poor when below 7 points.

- Evaluation of side effects and complications:

+ Local:

An ulcer caused by treatment, ulcer healing time.

I am surrounding area vasodilation.

Atrophic skin in the surrounding area.

+ Whole body:

Acne.

Menstrual disorders in women.

Hypertension.

Chronic gastritis.

+ Other undesirable effects (if any).

- Treatment stop:

+ When results are good: scars are stable, flat, soft and free of local functional symptoms, and the thickness of scars after the ultrasound is equivalent to the surrounding normal skin. The injection can be stopped at any time ≤ 6 times when clinical show success.

+ When the patient does not respond to treatment: the patient follows the right course of treatment from 4 to 6 times, but scars continue to develop, local functional symptoms do not decrease.

+ When the patient has some side effects or newly infected diseases such as gastrointestinal ulcer, gastrointestinal bleeding, systemic tuberculosis infection, severe menstrual disorders, Cushing's syndrome.

Results

General characteristics of the included objects

At the initiation time of treatment, there was no difference in age, gender, number, area, thickness and progression of scar between the two groups.

Treatment results

The good and quite good results in the studied group (66.7%, 24.2%) are higher than in control group (53.1%, 16.5%) with $p < 0.05$ as shown in see Table 1.

Table 1: Evaluation of treatment results

After scars treatment evaluation score	Studied group		Control group	
	n	%	n	%
Good (9 – 10 pts)	8	24.2	5	15.6
Quite good (7 – 8 pts)	22	66.7	17	53.1
Poor (< 7 pts)	3	9.1	10	31.3
p	< 0.05			

Unwanted effects

Side effects may include ulcers, acne, menstrual disorders and frequency of occurrence in the control group is higher than the studied group as shown in Table 2.

Table 2: Side effects in two study groups (n = 65)

Side effects		*Studied group*		*Control group*		Summary	
		n	%	n	%	n	%
Local	Ulcers	1	3.0	6	18.6	7	10.8
	Vasodilatation and atrophic skin	0	0	0	0	0	0
Whole body	Acnes	0	0	2	6.4	2	3.1
	Menstrual disorders	1/18	5.6	4/16	25	5/34	14.7
	Hypertension	1	3.0	1	3.1	2	3.1
	Gastritis	0	0	0	0	0	0
Other		0	0	0	0	0	0

Discussion

Keloids are benign, but severely affect the quality of life. Especially with continuous development feature, keloids can cause distortion, limiting joint mobility. Until now, there are no measures to cure keloids completely. Study shows that corticosteroid intralesional injections in both groups yield good results. In studied group, the number of patients receiving TAC injections at doses of 7.5 mg/square cm achieved quite good and good results (90.7%) is higher than control group who received TAC injection at doses of 15 mg/square cm (68.7%), this difference was statistically significant at $p < 0.05$. Triamcinolone inhibits the growth of fibrous cells and reduces collagen deposition in lesions [6], [7].

Tingling and pain at the lesions sites are very common functional symptoms and also cause the patient to come to the clinic. These symptoms heavily affect the quality of life of patients [8]. Our results show that 82.3% of the cases had no itch on the lesions after treatment in both groups; over 75.9% had no pain on the lesions in both groups.

The case of itching and pain can be due to the nerve extremities are no longer confined due to the decrease in density of fibrous cells and collagen fibres after corticoid injection. Corticosteroids also have an anti-inflammatory effect that reduces vascular permeability, inhibits the production of chemical intermediates that reduce inflammation, itch and pain.

Accurately measurement of the thickness of the scars is a very difficult matter. In the past, most studies assessed the thickness by measuring the elevation of the scar compared to the surrounding normal skin [2], [4]. This method is simple but inaccurate because most of the thickness of the scar is in the dermis. To determine the thickness of the scar we use Philip HD II ultrasound machine with high-frequency probes. This is a highly reliable measure, first used to accurately measure the thickness of the scar with a deviation of 0.01 mm. We are determining the thickness of scars before treatment and the average level of slack after each injection helps us to plan treatment.

In both groups, the mean scar thickness before treated was 5.50 mm. The mean scar thickness reduction after each injection in the studied group was 0.81 ± 0.39 mm, in the control group was 1.24 ± 0.53 mm. After treatment, the scar thickness was 2-3 times lower than before treatment ($p < 0.05$), the thickness of the scar corresponded to normal skin (1.9 mm).

Evaluation of skin flatness after treatment showed that in the studied group, 78.8% of patients had flattened scars, while in the control group, this rate was 65.6%. To achieve flatness compared to the surrounding skin, the studied group had to inject 3.5 times on average, while the control group had to inject 3 times on average. The results of Manuskiatti's research are similar to our results. After 2 injections of TAC (8 weeks), the thickness of the scar returned to normal compared with the surrounding skin [5]. None of the 65 patients in our study had flattened scars after one injection.

The softness of the skin is also an important criterion for evaluating treatment success. After treatment, the softness of scar in both groups improved significantly. However, there was no significant difference in comparison between the two groups.

There were 7 patients with scars ulcer after injected, one in studied group (3.0%) and 6 in the control group (18.6%). The cause of ulcer may be due to high dosage. This explains our results in the control group, patients treated with high doses (30 mg/1 ml) twice as often as studied group (15 mg/1 ml) should have more ulcer patients. The study of A. Darougheh in 20 keloids patients treated with triamcinolone of 20 mg/1ml injections showed no cases of the ulcer. However, our results in the studied group, one patient treated with lower doses (15 mg/1 ml) also have an ulcer after injection. This may be due to too-shallow injection techniques, which are also responsible for ulcers. Most cases of scar ulcers occur after 3 to 4 treatment times. Therefore, after the second injection the thickness of the scar should be noted, and especially injections should not be too shallow to avoid ulceration in this injection.

In the control group, there were 2 cases (6.25%) of acne reappearing in a total of 6 patients with a history of stable, treated acne. No cases of acne appear in patients with no history of acne before treatment. In the studied group, we did not find any cases of post-treatment acne (9 patients had a history of acne before treatment). Thus, when using high-dose topical corticosteroid therapy for keloids in patients with a history of acne, there is a risk of recurrence of acne. Therefore, for patients with post-acne keloid, it is best not to use corticosteroids therapy. These patients should take other therapies such as cold surgery or colour laser.

There were 5/34 female patients in both groups with menstrual disorders, with only 1/18 patient in the studied group and 4/16 patients in the control group. These patients had bleeding days increased 2-3 days, in contrast to the cycle is shortened by 5-7 days. This menstrual disorder usually occurs after 2 to 4 treatments but not severe, and after a short rest period from treatment, the menstrual period returns to normal.

There are two cases of hypertension during treatment, in which one patient in the control group suffered hypertension and ulceration at the lesion after treatment 4 times, so we stopped this patient treatment. A study by Daruogheh A. found that 37% of patients exhibited atrophy skin and vasodilatation [2]. However, we do not see any cases of skin atrophy around scars, vasodilatation or drug-induced gastritis.

This may be due to the fact that most of our patients have a low number of lesions, scar acreage is small, so the amount of drug used is not much. Therefore, in our experience, to minimise the side effects of the drug, patients should not be injected more than 60 mg each injection.

In conclusion, triamcinolone injections were effective in treating keloids: Studied group had a higher proportion of patients with quite good and good treatment results (90.7%) than in control group quite good and good results (68.7%) with $p < 0.05$. The rate of patients ceased itching, and pain post-treatment in the studied group was 86.6%, and 95.5%; Similar in control group is 78.1% and 80%. Although the average reduction in scars thickness after each injection in the control group (1.24 ± 0.53 mm) was significantly higher than in the studied group (10.81 ± 0.39 mm) ($p < 0.05$), however, some side effects such as ulceration at the lesions, acne, menstrual disorder, are less common in the studied group (7.5 mg/1 cm^2). Therefore, the treatment of keloids with Triamcinolone injection dose of 7.5 mg/1cm^2 showed best results.

References

1. Rasaii S, Sohrabian N, Gianfaldoni S, Pazyar N, Bakhshaeekia A, Lotti T, Ramirez-Pacheco LA, Lange CS, Matta J, Seifi V, Hadibarhaghtalab M. Intralesional triamcinolone alone or in combination with botulinium toxin A is ineffective for the treatment of formed keloid scar: A double blind controlled pilot study. Dermatologic therapy. 2018 13:e12781. https://doi.org/10.1111/dth.12781 PMid:30422367

2. Darougheh A, Asilian A, Shariati F. Intralesional triamcinolone alone or in combination with 5-fluorouracil for the treatment of keloid and hypertrophic scars. Clinical and Experimental Dermatology: Clinical dermatology. 2009; 34(2):219-23. https://doi.org/10.1111/j.1365-2230.2007.02631.x PMid:19018794

3. Bruscino N, Lotti T, Rossi R. Photodynamic therapy for a hypertrophic scarring: a promising choice. Photodermatology, photoimmunology & photomedicine. 2011; 27(6):334-5. https://doi.org/10.1111/j.1600-0781.2011.00619.x PMid:22092740

4. Đỗ Thiện Dân. Nghiên cứu ứng dụng điều trị sẹo lồi, sẹo quá phát bằng phẫu thuật laser CO2, laser Nd-YAG kết hợp tiêm Triamcinolone Acetonide tại chỗ. Luận án tiến sỹ y học, Học viện Quân Y. 2006; 7- 8:20-21; 64-65.

5. Manuskiatti W, Fitzpatrick RE. Treatment response of keloidal and hypertrophic sternotomy scars: comparison among intralesional corticosteroid, 5-fluorouracil, and 585-nm flashlamp-pumped pulsed-dye laser treatments. Archives of dermatology. 2002; 138(9):1149-55. https://doi.org/10.1001/archderm.138.9.1149 PMid:12224975

6. Han BW, Xu Shao Jun XS. Mechanism of steroid treatment on abnormal scars [in Chinese]. Chin J Surg. 2000; 38:378-381.

7. Lim CP, Phan TT, Lim IJ, Cao X. Stat3 contributes to keloid pathogenesis via promoting collagen production, cell proliferation and migration. Oncogene. 2006; 1–10. https://doi.org/10.1038/sj.onc.1209531

8. Lee SS, Yosipovitch G, Chan YH, Goh CL. Pruritus, pain, and small nerve fiber function in keloids: a controlled study. J Am Acad Dermatol. 2004; 51(6):1002-6. https://doi.org/10.1016/j.jaad.2004.07.054 PMid:15583600