

Original Research Article

COMPARATIVE STUDY OF INTRA LESIONAL TRIAMCINOLONE ACETONIDE + 5-FLUOROURACIL VERSUS TRIAMCINOLONE ACETONIDE + VERAPAMIL IN THE TREATMENT OF KELOIDS

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ABSTRACT

Background: Keloids are common problem with significant recurrence. Despite of many options available, there is no standard acceptable treatment for keloid. This study compares the combinations of triamcinolone acetonide + 5-Fluorouracil versus triamcinolone acetonide + verapamil in the treatment of keloids.

Materials and Methods: This is a randomized study for a period of one year. 60 patients were randomly allocated into two groups. Group 1 – TAC + Verapamil, Group 2 – TAC + 5-FU. Intralesional injection was given every 3 weeks till 24 weeks.

Results: There was reduction of scar height, vascularity, pigmentation and pliability. Improvement in terms of height, vascularity, pliability was faster with TAC+5FU compared to TAC + Verapamil.

Conclusion: TAC+5FU combination were effective in keloids in comparison to TAC +Verapamil. The combination offered the balanced benefits of faster and more effective response.

Keywords: Keloid, triamcinolone acetonide, 5-fluoro uracil, Verapamil.

INTRODUCTION

Keloid occur as a result of abnormal wound healing. Keloid is an abnormal fibrous tissue outgrowth that extends beyond the borders of wound. It is an abnormal proliferation of scar tissue that forms at site of cutaneous injury. It does not usually regress spontaneously and possess a high chance of recurrence after excision. It is caused by minor trauma to skin like ear piercing, abrasion, tattoos, burns, injection site, surgical site. It occurs anywhere in the body but the most common areas are sternum, shoulder, earlobes, cheeks.

The exact cause of this disorder remains elusive despite ongoing research and hypothesis. Keloids are known for lack of standardized treatment and high recurrence rate, this is evident in wide range of available treatment modalities, like surgical excision,

cryotherapy, low dose radiotherapy, silicon sheets, intralesional steroids, 5 FU, bleomycin.

Triamcinolone acetonide (TCA), long acting glucocorticoid has been the most popular drug in keloid treatment, alone or in combination. It suppresses the inflammatory process in the wound, diminishes collagen and glycosaminoglycan synthesis, fibroblast growth factors are inhibited, enhances collagen and fibroblast degeneration.

5-Fluoro Uracil (5-FU) – it is a pyrimidine analogue first introduced in treatment of keloid by Fitz-Patrick. It inhibits deoxyribonucleic acid synthesis by irreversibly inhibiting thymidine synthase. 5- FU is believed to hinder type- 1 collagen gene expression and effects of TGF- β .^[1]

Verapamil, a phenyl ethylamine (calcium channel blocker) appears to degrade the extracellular matrix by inhibiting collagen production. It may prevent

platelet aggregation and decreased neutrophil activity, inhibiting inflammation. It leads to depolymerization of actin filaments, cells configurational changes and apoptosis and ultimately reduces the fibrous tissue.

This study was undertaken to compare the combination of Triamcinolone acetonide and 5-FU with Triamcinolone acetonide alone in keloid treatment.

Aims and Objectives

To compare the efficacy of combination therapy with intralesional triamcinolone + 5 – FU and intralesional triamcinolone and verapamil.

MATERIAL AND METHODS

This is a single blind randomized prospective study conducted in department of plastic and reconstructive surgery, government general hospital, Kurnool. Patients attending the opd in department of plastic and reconstructive surgery for a period of one year, Jan 2022 to Jan 2023.

Inclusion Criteria

- Age group of 10-50 years attending the opd with keloids.
- Size of less than 10cm
- Greater then 6 months duration
- All the patients were willing to undergo treatment and follow-up

Exclusion Criteria

- Pregnant and lactating female
- Patients having active inflammation, ulcers.

- Immunocompromised patients.

Detailed history and demographic parameters were recorded including etiology and region of keloid.

Total of 60 patients were divided into two groups of 30 patients each. First group was treated with injection combination of Triamcinolone acetonide (40 mg /ml) + 5FU (50mg/ml), second group with Triamcinolone acetonide (40 mg /ml) + Verapamil (2.5mg/ml) injected with insulin syringe – 0.5ml per sq m of keloid. Multiple pricks of 1cm apart. This was administered every 3rd week till 24 weeks. Patient received no other therapies like laser therapy, pressure garments, scar massages during the course of study. Evaluation was done objectively using Vancouver scar scale (VSS). Vascularity, pigmentation, pliability, height were assessed. Height was measured with calipers, pliability was assessed with palpation, vascularity was assessed with visual inspection and pigmentation was scored. Pain and pruritus were scored.

Data analysis Microsoft-xl 2007, and analysed by SPSS version 20.0. P value <0.05 was considered statistically significant.

RESULTS

A total of 60 patients randomly divided into two groups, each 30 patients. Group 1: combination of Triamcinolone acetonide (40 mg /ml) + 5FU (50mg/ml) Group 2: Triamcinolone acetonide (40 mg /ml) + verapamil (2.5 mg/ml).

Table 1: Age

Age group	Group 1	Group 2
10-20	6	3
21-30	16	15
31-40	4	5
41-50	4	7
Total	30	30

Majority of the patients were of the age group 21-30 years.

Table 2: Sex distribution

Gender	Group 1	Group 2
Female	16	18
Male	14	12

The incidence of keloid in females was slightly higher.

Table 3: Site of lesion

Site of lesion	Number
Chest	20
Upper extremity	8
Ear lobe	10
Face	6
Shoulder	6
Back	6
Lower extremity	4

Majority of keloids were on chest followed by ear lobes.

Table 4: Vancouver scar scale for pigmentation, vascularity, pliability and height- Group 1

Vancouver parameter	0 week	3 week	9 weeks	18 weeks	24 weeks	Post drug
Skin pigmentation	2	1.76	0.03	0	0	0
Skin vascularity	1.8	1.36	0.25	0	0	0
Skin pliability	2.33	1.56	0.3	0	0	0
Scar height	1.63	1.26	0.19	0	0	0

Table 5: Vancouver scar scale for pigmentation, vascularity, pliability and height- Group 2

Vancouver parameter	0 week	3 week	9 weeks	18 weeks	24 weeks	Post drug
Skin pigmentation	2	1.5	0.2	0.2	0.2	0
Skin vascularity	1.89	1.15	0.07	0	0	0
Skin pliability	2.26	1.3	0.04	0	0	0
Scar height	1.67	1.19	0.07	0	0	0

There was recording of pigmentation, vascularity, pliability and height at every assessment. Statistically significant difference in vascularity, pliability were noted after 6th week, while height, pigmentation were noted after 3rd week. Height, vascularity, pliability were faster with 5-FU +TAC.

Table 6: Symptoms and signs

Serial no.	Symptoms and signs	percentage
1	Pruritis	33.33
2	Pain	20
3	Cosmetic difigurment	18.33
4	Skin discolouration	15
5	Restricted movements	13.33

Table 7: Patient and observer scar assessment scale (POSAS)

	Pliability	Thickness	Relief	Vascularization	Surface area	Pain	pruritus
Group 1	4	6	5	6	5	4	6
Group 2	5	6	4	6	5	4	6

Out of 30 patients in group 1 good response was seen in 23 %, fair response in 13 %. In group 2 excellent response in 26 % and 10 % showed good response.

Table 8: Adverse effects

Adverse effects	Group 1	Group 2
telangiectasia	1	5
Skin atrophy	1	3
Skin ulceration	4	2
Systemic adverse effects	0	0

Skin ulcers were more in TAC+5FU.

**Figure: Pre and Post-Operative Keloids**

DISCUSSION

Keloid is an abnormal fibrous tissue outgrowth which extends beyond the borders of the wound. They are a cause of cosmetic and physical and psychological embarrassment to patient. Intra-lesional TAC acts by decreasing fibroblast proliferation, increases collagen disintegration, suppress the inflammation. 5FU is an antimetabolite, interferes with ribonucleic

acid synthesis, inhibit fibroblast proliferation and verapamil is a calcium channel blocker, inhibits collagen production.

A randomized, single blind prospective study was done involving 60 patients attending department of plastic surgery, GGH, Kurnool. Patient in group 1 received triamcinolone (40 mg/ml) + 5 - FU (50 mg/ml) and group 2 received triamcinolone (40 mg/ml) + verapamil (2.5 mg/ml) for 6 months.

Age wise distribution where 51 % of patients belongs to 21 to 30 years group. In a study of Berman B et al and Robel et al, the onset of keloid was commonly between 10 to 30 years of age.

In this study, higher incidence in females reflects a more significant cosmetic concern.

In this study, most common site was chest (33%) followed by upper extremity (16%) and earlobe (13.3%). According to Berma B et al, the common involved sites for keloid are chest, head and neck areas.

Muir, in his study, found higher incidence in presternal area. Out of 60 patients, 33 % patients had complaints of pruritis followed by pain.

In this study, the primary outcome evaluated was percentage of flattening and regression in keloid size. We have attempted standardization and comparison using acceptable scar assessment scale.

CONCLUSION

A randomized, single blind prospective study was done to compare the efficacy and safety response of combination therapy of TAC + 5 FU and TAC + Verapamil in treatment of keloid. Both groups showed effective decrease in VSS and POSAS score over 1 year. A combination of TAC + 5 FU offered a balanced benefit of faster and effective response and TAC + verapamil showed good response initially but later on there was no significant response. TAC + 5 FU combination offered the balanced benefit of faster and effective response. Further study in large number of patient of Triamcinolone and Verapamil will aid further insights into the effectiveness of combination.

Conflict of Interest: None.

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