

Study of Efficacy of Intradermal Injection of Tranexamic Acid and 50% Glycolic Acid Peeling in Treatment of Melasma

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Abstract

Background: Melasma is one of the most common causes of facial hyperpigmentation which causes cosmetic disfigurement and leads to psychological problems. Although various treatments are available for melasma, it remains a difficult condition to treat.

Aim of the Work: The aim of the study was to evaluate and compare the efficacy of intradermal injection of tranexamic acid and glycolic acid peeling in the treatment of melasma.

Patients and Methods: A total of 112 patients with melasma were divided into two groups: Group A; 56 patients were treated with an intradermal injection of tranexamic acid and Group B 56 patients were treated with glycolic acid peeling 50%. Clinical assessment (according to the modified Melasma area and severity index) was performed for all patients.

Results: There was a statistically significant difference between the studied groups as regards the response to different therapeutic modalities with the best results in Group A than Group B. There was the statistically significant difference between A and B, Group A showed a better response than Group B.

Conclusion: This signifies that tranexamic acid is more effective than commonly used 50% glycolic acid peel. Furthermore, the recurrence of melasma was found to be less in tranexamic acid as compared to glycolic acid 50%.

Key words: Glycolic acid, Injection Tranexamic acid, Melasma, Tranexamic acid

INTRODUCTION

Melasma is a common disorder of hyperpigmentation of face among Asians which is difficult to treat, and the treatments are often ineffective due to its higher rate of recurrence.^[1] Among the newer modalities, tranexamic acid is being compared with 50% glycolic acid peel which is a commonly used method in the treatment of melasma. Tranexamic acid inhibits ultraviolet induced plasmin activity in keratinocytes by preventing the binding of plasminogen to the keratinocytes which ultimately results in decreased free arachidonic acids and a diminished ability to produce prostaglandins, and this decreases

melanocyte tyrosinase activity.^[2] Glycolic acid peel effect is derived from its chemo exfoliating properties which depend on facilitating the removal of melanized keratinocytes leading to melanin pigment loss and acceleration of skin turnover.^[3]

Aims and Objectives

The aim of the study was to compare the efficacy of intradermal injection of tranexamic acid with 50% glycolic acid peel in the treatment of melasma.

Inclusion Criteria

All patients are presenting to the dermatology OPD with features of melasma.

All patients willing for follow-up and giving informed consent.

Exclusion Criteria

The patients with a history of hormonal therapy such as contraceptive pills (during the past 12 months). Bleeding disorders or concomitant use of anticoagulants such as warfarin.

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Month of Submission : 12-2017
Month of Peer Review : 01-2018
Month of Acceptance : 01-2018
Month of Publishing : 02-2018

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Topical treatment (1 month before the study) such as triple combination therapy.

Active herpes simplex, facial warts, or active dermatoses.

History of hypersensitivity to any of the components of the formula of the study. Pregnant or lactating females.

PATIENTS AND METHODS

Study Setting

This study was conducted at OPD of the Department of Dermatology, BRDMC, Gorakhpur, UP.

Study Design

The study design was a randomized control trial.

Study Population

The patients with melasma attending a tertiary centre OPD Table 1.

Intervention

- Group A: Intradermal injection of tranexamic acid + 30SPF sunscreen
- Group B: 50% glycolic acid peel + 30SPF sunscreen.

Expected Outcome

At least 10% difference in two regimen treatment efficacy response.

Sample Size

Sample size was calculated using G power Vesion 3.1.9.2 using effect size of 0.57, alpha error of 5%, power – 80%, and the calculated sample size was 100 (50 in each group).

Sampling Technique

Consecutive sampling for 3 months duration from January 2017 to March 2017.

Procedure

A total of 112 patients were included in the study and divided into two groups:

- Group A: Included 56 patients treated with an intradermal injection of 0.05 mL of tranexamic acid solution in normal saline (4 mg/mL) into the melasma lesion at 1 cm interval using sterile insulin syringe, weekly for 12 weeks Figure 1.^[7]
- Group B: Included 56 patients treated with 50% glycolic acid peeling within a period of 2 min starting at the forehead, continued to the cheeks, the chin and then the nose. The peel was terminated by the dilutional effect of washing with cold water. Done every 2 weeks for 12 weeks Figure 2.^[6]

Proper informed consent was taken, a detailed clinical record prepared, and baseline investigations were done.

All the patients were subjected to complete history taking and examination: With regard to onset of melasma, duration, family history, and aggravating factors.

Wood's lamp examination was done for all patients to determine the type of melasma.^[4]

Digital photographs were taken for all patients at baseline and after the end of the follow-up period.

Criteria of Evaluation

Patients were followed up monthly for 3 months after the last session to detect any recurrence or complications from April 2017 to June 2017.

Final results for clinical improvement were made using following parameters:

1. Modified melasma area severity index score^[5]
2. Clinical efficacy of the treatment response
3. Clinical photographs.

RESULTS

The results are depicted in Figure 3 and Table 2

CONCLUSION

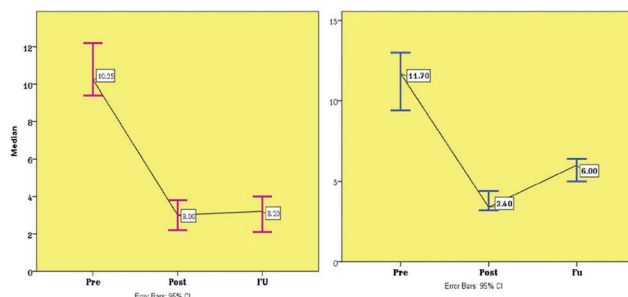
- Improvement in melasma in both the groups with treatment.
- Group A showed significant improvement as compared to Group B.

Table 1: General demographic profile of study subjects (n=112)

Age category		Pattern of melasma	
20–30 year	28 (25%)	Centro facial	50 (44.6%)
31–40 year	58 (51.7%)	Malar	58 (51.7%)
41–50 year	18 (16.0%)	Mandibular	4 (3.5%)
51–60 year	8 (7.1%)	Filtzpatric skin type	
		Type III	12 (10.7%)
		Type IV	52 (46.4%)
		Type V	48 (42.8%)
Sex			
Male	35 (31.2%)		
Female	77 (68.7%)		
Place of residence			
Rural	58 (51.7%)		
Urban	54 (48.2%)		
Type of melasma			
Mixed	104 (92.8%)		
Epidermal (no dermal and indeterminate type found)	8 (7.1%)		

Table 2: Modified MASI Score before and after treatment and after further 3 months of follow up

Modified MASI score	Group A - median (IQR)	Group B - median (IQR)	P value (Man Whitney U-test)
Pre-treatment	10.25 (8.1–14.15)	11.7 (8.8–14.35)	0.40
Post-treatment	3 (1.10–5.60)	3.4 (2.25–5.4)	<0.001
Follow-up	3.2 (1.35–5.05)	6 (4–7.75)	0.46



Efficacy of treatment = (mMASI before – mMASI after)/mMASI before



Figure 1: Group A: Intradermal injection of tranexamic acid (a-c) pre-procedure, (d-f) post-procedure

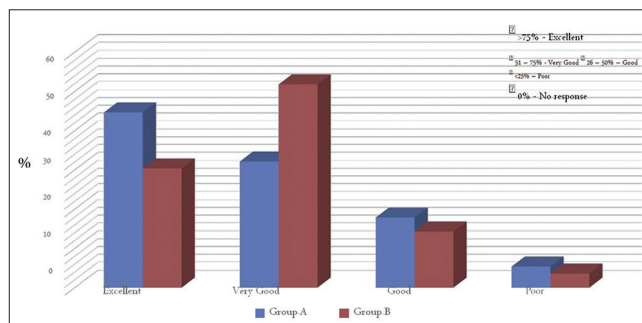


Figure 3: Efficacy of treatment response

- This signifies that tranexamic acid is more effective than commonly used 50% glycolic acid peel. Furthermore, the recurrence of melasma was found to be less in tranexamic acid as compared.

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How to cite this article: Kaushik KU, Shivangi Sachan, Mohammad A. Study of Efficacy of Intradermal Injection of Tranexamic Acid and 50% Glycolic Acid Peeling in Treatment of Melasma. *Int J Sci Stud* 2018;5(11):58-60.

Source of Support: Nil, **Conflict of Interest:** None declared.