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ORIGINAL RESEARCH

A COMPARATIVE STUDY OF GLYCOLIC ACID PEEL VERSUS MODIFIED KLIGMAN'S REGIMEN IN PATIENTS WITH MELASMA

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ABSTRACT

Background: To compare 35% glycolic acid peel versus modified Kligman's regimen in patients with Melasma.

Methods: 80 patients with Melasma were divided into 2 groups of 40 each. Group I received topical modified Kligman's formula (MKF) daily and group II received 35% glycolic acid peels once in 4 weeks for 12 weeks. The response was assessed by MASI score.

Results: Group I comprised 18 males and 22 females and group II 21 males and 19 females. Precipitating factors were sun exposure in 16 and 16, cosmetics in 4 and 9, idiopathic in 2 and 3, pregnancy in 10 and 7, and drugs in 4 and 5 in group I and group II respectively. The common type was central in 28 and 29 and malar in 12 and 11 in group I and group II respectively. Disease duration was 0.5-1 years in 6 and 10, 1-2 years in 14 and 13 and >3 years in 20 and 17 patients group I and group II respectively. The difference was significant ($P< 0.05$). The pre-treatment mean MASI score in group I was 8.4 and in group II was 10.8 and post- treatment score was 2.9 in group I and 3.5 in group II. The difference was significant ($P< 0.05$).

Conclusion: Melasma patients were well managed with both glycolic acid peels and modified Kligman's formula. The results in both groups were comparable.

Keywords: Melasma, glycolic acid peels, Kligman's formula

INTRODUCTION

Melasma is a common skin condition characterized by the development of brown or grayish-brown patches on the face, especially on areas exposed to the sun. While the exact cause of melasma is not fully understood, it is believed to be related to a combination of genetic factors, hormonal changes, and exposure to ultraviolet (UV) radiation.[1]

The approach to treatment is frequently multimodal. Before beginning therapeutic correction, it is crucial to provide patients with adequate counselling regarding the chronicity of their disease, the significance of photoprotection, and the role of hormones in disease persistence.[2] This is because recurrences frequently limit the extent of improvement that can be achieved. This is because psychological and social stress are associated with the disease. Therefore, even with the best of treatments, melasma is difficult to treat.[3] The cornerstone of melasma treatment is topical therapy, which is the first and most important requirement for single, dual, or triple combinations. The adjunctive protocol consists of additional interventions, which are typically second- or third-line approaches. Glycolic acid, an α Hydroxy acid, is used in chemical peels to improve the appearance of skin by exfoliating the epidermis and then resurfacing it.[4] For the treatment of melasma,

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Kligman's formula, which combines hydroquinone 5%, 0.1% retinoid, and 0.1% steroid in a cream base, has been in use for over 20 years. Subsequently, a number of changes were made; 4% hydroquinone, 0.05% retinoid, and 1% hydrocortisone acetate were among them.[5] Considering this, in this study we compared 35% glycolic acid peel versus modified Kligman's regimen in patients with Melasma.

MATERIALS & METHOD

This observational, prospective study comprised eighty patients with Melasma of both genders. All selected patients were made aware of the study and their written consent was obtained. Ethical approval for the study was also taken from the Research & Review Committee of the institute.
Demographic data such as name, age, gender etc. was recorded. Patients were randomly divided into 2 groups of 40 each. Group I received 35% glycolic acid peels and group II received topical modified Kligman's formula (MKF) daily. Treatment was given once in 4 weeks for 12 weeks. Parameters such as onset, disease duration, progression, triggering factors, other associated systemic illness, family history, past treatment history were recorded. The response was determined by MASI score as total MASI score: Forehead 0.3 (D+H) A + right malar 0.3 (D+H) A + left malar 0.3 (D+H) A + chin 0.1 (D+H) A. D is darkness graded from 0 to 4, H is homogeneity graded from 0 to 4, A is percentage area of the face affected graded from 0 to 6. The results of the study were compiled and statistically analyzed. P value less than 0.05 was considered significant.

RESULTS

Table I Patients distribution

Groups	Group I	Group II
Method	35% glycolic acid peels	topical modified Kligman's formula
M:F	18:22	21:19

Group I comprised 18 males and 22 females and group II 21 males and 19 females (Table I).

Table II Comparison of parameters

Variables	Parameters	Group I	Group II	P value
Precipitating factors	Sun exposure	16	16	0.05
	Cosmetics	4	9	
	Idiopathic	2	3	
	Pregnancy	10	7	
	Drugs	4	5	
Type	Central	28	29	0.04
	Malar	12	11	
Disease duration (years)	0.5-1	6	10	0.85
	1-2	14	13	
	>3	20	17	

Precipitating factors were sun exposure in 16 and 16, cosmetics in 4 and 9, idiopathic in 2 and 3, pregnancy in 10 and 7, and drugs in 4 and 5 in group I and group II respectively. The common type was central in 28 and 29 and malar in 12 and 11 in group I and group II respectively. Disease

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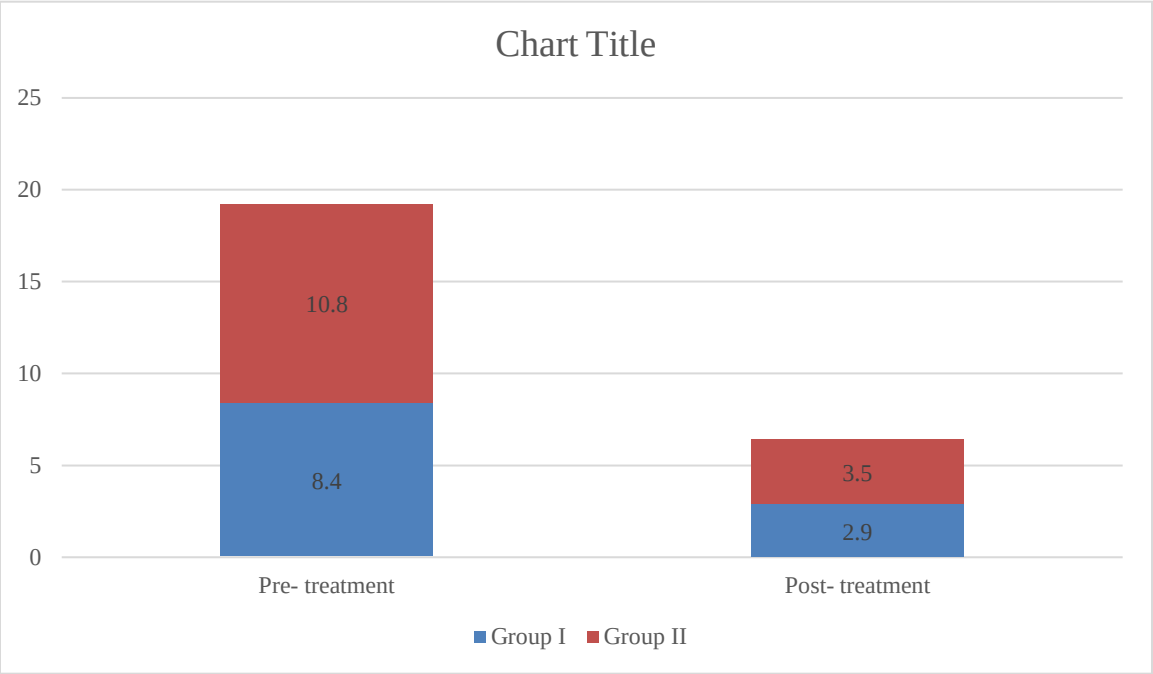
duration was 0.5-1 years in 6 and 10, 1-2 years in 14 and 13 and >3 years in 20 and 17 patients group I and group II respectively. The difference was significant (P< 0.05) (Table II).

Table III MASI in both groups

Parameters	Group I	Group II	P value
Pre- treatment	8.4	10.8	0.05
Post- treatment	2.9	3.5	0.04

The pre-treatment mean MASI score in group I was 8.4 and in group II was 10.8 and post-treatment score was 2.9 in group I and 3.5 in group II. The difference was significant (P< 0.05) (Table III, graph I).



Graph I MASI in both groups

DISCUSSION

Melasma is an acquired hyperpigmentation disorder characterized by symmetrically distributed, blotchy, light-to-dark brown macules on sun-exposed areas of the body. Fitzpatrick skin types IV–VI are the most common to have it.[6] The most easily recognized risk factors are sun exposure, genetic predisposition, pregnancy, oral contraceptives, thyroid conditions, and medications such as antiepileptics. Both melanocytosis (an increase in the number of melanocytes) and melanogenesis (an excess of melanin produced) have been linked to the excessive pigmentation.[7] Chemical peels are a popular treatment option that are used as a second line of treatment for melasma and may help improve the condition of the epidermal layer.[8,9] The ability of the peel to cause stagnant melanin to be phagocytosed handles the dermal component. Deep chemical peeling is not advised for skin types IV through VI, though, as it can result in severe dyschromias and scarring for the dermal component of melasma.[10,11] Spectrophotometry measurements of sequencing peels with a triple combination topically have demonstrated superior efficacy in

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moderate to severe melasma. The most often prescribed bleaching agent is hydroquinone. Retinoic facilitates pigment removal by accelerating keratinocyte turn over and enhancing hydroquinone penetration whereas corticosteroid reduces inflammation caused by both hydroquinone and retinoid.[12,13] We compared 35% glycolic acid peel versus modified Kligman's regimen in patients with Melasma.

Our results revealed that group I comprised 18 males and 22 females and group II 21 males and 19 females. Sarkar et al[14] in their study on 40 patients of melasma, group I (20) were treated with a combination of serial Glycolic acid peels combined with Triple combination cream and group II (20) treated with only Kligman's triple combination cream. The results showed a significant decrease in the MASI score from 0 to 12 weeks in both groups. Basil et al[13] compared the therapeutic efficacy of 35% glycolic peel and triple combination cream in the treatment of melasma in 60 diagnosed cases which were randomly enrolled equally to two groups P and Q. Group P patients given serial 35% Glycolic acid peel and group Q patients given Triple combination cream to be applied topically once at night daily. Followed up on 4th, 8th and 12th week. At each visit clinical response to treatment was calculated using MASI score. At 4th, 8th and 12th week post-treatment evaluation, Triple combination cream had an overall superiority to serial 35% glycolic acid peel as a topical hypopigmenting agent. The results of the study show that Triple combination cream is a better hypopigmenting agent with rapid rate of clinical improvement when compared to 35% glycolic acid peel.

We observed that precipitating factors were sun exposure in 16 and 16, cosmetics in 4 and 9, idiopathic in 2 and 3, pregnancy in 10 and 7, and drugs in 4 and 5 in group I and group II respectively. The common type was central in 28 and 29 and malar in 12 and 11 in group I and group II respectively. Disease duration was 0.5-1 years in 6 and 10, 1-2 years in 14 and 13 and >3 years in 20 and 17 patients group I and group II respectively. Badabagni et al[15] in 100 cases of Melasma, group 1 received topical modified Kligman's formula (MKF) daily and group 2 received 35% glycolic acid peels once in 4 weeks for 12 weeks. Response was assessed by MASI score. At the end of 12 weeks good to very good response was seen i.e. 95% on MKF treated patients where as 85% on glycolic acid peel patients. Burning sensation and redness was observed in many patients in glycolic acid group whereas cuneiform eruptions in MKF group.

It was seen that the pre-treatment mean MASI score in group I was 8.4 and in group II was 10.8 and post- treatment score was 2.9 in group I and 3.5 in group II. Kim et al[16] have found that biopsy specimens of lesional melasma skin had greater expression of the vascular endothelial growth factor in keratinocytes compared to nearby non-lesional skin. Three distinct facial patterns have been traditionally identified for melasma: Malar, centrofacial and mandibular. Although melasma of the arms and forearms has also been described, the entity is relatively uncommon and less characterised than facial melasma. Regarding the histological classification of melasma, three histologic patterns have been identified based on the primary location of pigment accumulation: Epidermal, dermal and mixed.

CONCLUSION

It was observed that melasma patients were well managed with both glycolic acid peels and modified Kligman's formula. The results in both groups were comparable.

REFERENCES

1. Griffiths CE, Finkel LT. Ditre CM et al. Topical tretinoin (retinoic acid) improves Melasma: A vehicle controlled clinical trial Br. J. Dermatol. 1993; 129:415- 21.

ISSN: 0975-3583, 0976-2833 VOL14, ISSUE 9, 2023

2. Kalla G Anush Garg, Kacchwa D. Chemical peeling - GA versus TCA in Melasma, In cosmetology, IJDVL. 2001; 67:82-84.
3. Javaheri SM, Handa S, Kaur I, Kumar B. Safety and efficacy of glycolic acid facial peel in Indian women with Melasma, Int J Dermatol. 2001; 40(5):354-7.
4. Katambas A, Antoniou CH, Melasma Clinical classification and treatment, J Eur Acad Dermatol Venereol. 1995; 4:217-23.
5. Godse KV. Triple combination of hydroquinone, tretinoin and mometasone furoate with glycolic acid peels in Melasma, Indian J Dermatol. 2009; 54(1):92- 93.
6. Savant SS, Mehta N. Superficial and Medium Depth Chemical Peeling, in: Savant SS, Shah RA, Gore Deds. Textbook and Atlas of Derma to surgery and cosmetology 1 stedn. Mumbai ASCAD, 1998, 136-14.
7. Mahajan R, Kanwar AJ, Parsad D, Kumaran MS, Sharma R. Glycolic acid peels/azelaic acid 20% cream combination and low potency triple combination lead to similar reduction in Melasma severity in ethnic skin: Results of a randomized controlled study. Indian J Dermatol. 2015;60:147-52.
8. Im S. Increased expression of a melanocyte stimulating hormone in the lesion skin of Melasma, Br J Dermatol. 2002; 146:165.
9. Bari AU, Iqbal Z, Rahman SB. Tolerance and safety of superficial chemical peeling with salicylic acid in various facial dermatomes, Indian J Dermatol Venereol Leprol. 2005; 71:87-90.
10. Gupta RR, Mahajan BB, Garg G. Chemical peeling - Evaluation of glycolic acid in varying concentrations and time intervals, Indian J. Dermatol Venerol Leprol. 2001; 67:28-9.
11. Basil A, Akula ML, Najmuddin F, Shetty NJ, Shetty M. A comparative study between the efficacy of 35% glycolic acid peel and triple combination cream in the treatment of melasma. Indian Journal of Clinical and Experimental Dermatology, April-June, 2018;4(2):123-131.
12. Moy LS. Superficial chemical peels with alpha-hydroxy acid. In: Robinson JK, Andt KA, Wintroub BU, editors. Atlas of Cutaneous Surgery, 1st ed. Philadelphia: WB Saunders; 1995. P. 345-51.
13. Karen JK, Pomeranz MK. Skin changes and diseases in pregnancy. In: Wolff K, Goldsmith LA, Katz SI, Gilchrest BA, Paller AS, Leffell DJ, editors. Dermatology in General Medicine, 7th ed. New York: McGraw-Hill; 2008. P. 955-62.
14. Sarkar R, Kaur C, Bhalla M, Kanwar AJ; The combination of glycolic acid peels with a topical regimen in the treatment of melasma in dark-skinned patients: A comparative study; Dermatol Surg. 2002;28:828–32.
15. Badabagni P, Birudala R. A comparative study of 35% glycolic acid peel versus modified Kligman's regimen in treating Melasma in patients with dark skin. Drugs. 2021;10:10.
16. Kim EH, Kim YC, Lee E-S, Kang HY. The vascular characteristics of melasma. J Dermatol Sci. 2007;46:111–6.