

Original Research Article

Analysis of response of epidermal melasma to 70% glycolic acid peel

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Received: 17 December 2019

Revised: 02 January 2020

Accepted: 03 January 2020

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ABSTRACT

Background: Melasma is an acquired disorder which presents as light brown to dark muddy brown macules (hypermelanosis) symmetrically and bilaterally on face mainly in areas which are exposed to sun and is seen more commonly among women. Chemical peels are said to be second line of management in melasma among which glycolic acid peel is considered as a gold standard. Aim of present study was to analyse the therapeutic response of epidermal melasma to 70% glycolic acid peel.

Methods: 30 subjects were included in the study. Baseline melasma area and severity index (MASI) score of each epidermal melasma patient was recorded and were treated with 70% glycolic acid peel once in 3weeks for 3months and analysed response after 3 months using MASI scores.

Results: Peak incidence of melasma was seen between age groups 31-40 years with female to male ratio 9:1, malar pattern being the most common pattern with majority of the patient's duration of illness >1 year. 30% had positive family history. 26.6% had history of daily sun exposure >1 hour. 63% reduction of MASI score present. Most common side effects were erythema and burning.

Conclusions: 70% glycolic acid along with sunscreen showed significant results in the improvement of melasma with 63% reduction in MASI score 12.97 ± 5.15 to 4.69 ± 1.92 .

Keywords: Epidermal melasma, MASI score, Chemical peel, 70% glycolic acid

INTRODUCTION

Melasma is a common chronic refractory acquired hyperpigmentation of the skin which is characterized with brown, dark brown to grey pigmentation most commonly on face and sometimes on extra-facial areas such as forearm. There is no systemic involvement in melasma. It causes significant psychological stress to the affected individual. Females are more commonly affected and seek treatment. Various aggravating and precipitating factors like hormonal factors, pregnancy, oral contraceptive pills are known to be related. Exposure to sunlight aggravates the intensity of pigmentation.¹

Mode of treatment of melasma is a multimodality approach. Before starting the treatment of melasma, it is very significant to counsel the patients regarding its chronicity and also recurrence of the disease as it is attached to psychological and social stress. Therefore, melasma treatment is a challenge even by the best of its interventions.²

The primary treatment of melasma are topical therapies. They form the primary mandatory step and are available in single, dual, or triple combinations.²

Gold standard treatment of melasma consists of hydroquinone (HQ) and triple combination creams

(TCCs). The side effects and long-term safety of HQ has led to develop alternate treatment options. Kojic acid, azelaic acid, arbutin, ascorbic acid, chemical peels and lasers are the current treatment modalities.³

The second-line of management in melasma includes chemical peels which help in improving the epidermal component of the disease and cause depigmentation by inducing desquamation, regeneration and remodelling of skin thus improving the skin texture.²

This study was conducted with the aim to analyse the response of epidermal melasma to 70% glycolic acid peel.

METHODS

Study groups have been taken from the patients who came to out-patient Department of Dermatology Venerology and Leprology at Meenakshi Medical College Hospital and Research Institute from February 2018 to August 2019. Patients with epidermal melasma were selected by examining through Wood’s lamp. Patients who are allergic to glycolic acid or having local inflammatory skin conditions such as acne, active or recurrent herpes labialis, eczema, open wounds, having keloidal tendency and history of abnormal scarring and who are pregnant and lactating women were excluded.

Written consent for their participation was taken from those patients who were willing and fulfilling above criteria in the study. Clinical photographs were taken and baseline melasma area and severity index (MASI) scores was recorded before starting the study.^{4,5}

Procedure

Pre peel phase

Before the initiation of treatment with peel, patients were given 30+ SPF sunscreen to apply in the morning and 15% azelaic acid cream which is a depigmenting cream to be applied during the night time for 2 weeks.

Peeling procedure

Patients were asked to lie down on a bed with head elevated at 45° angle with eyes closed. Skin over face was cleaned with a cleanser using gauze pieces. Sensitive areas such as lateral canthus of eyes, nasolabial folds, both angles of mouth were protected with a moisturizing cream. According to area of melasma involved, required quantity of peel is taken into a plastic bowl and a thin coat of peel is applied with a brush evenly in order, beginning from forehead, right cheek, left cheek, nose and chin for 3-5 min till erythema is seen and neutralised with 10-15% sodium bicarbonate and then washed with water. After drying of skin, patient was given 30+ SPF sunscreen to apply all over face and asked the patient to

review after 3 weeks or to review as soon as possible if there are side effects which were already explained.

Post peel care

Patients were instructed not to apply any other irritants on face for 3 days and to use only mild soap and application of sunscreen with 30+ SPF is mandatory. In case of crusting, patients were given topical antibacterial ointment to prevent secondary bacterial infections. Peeling procedure is repeated once in 3 weeks for 3 months. Photographs were taken every time at the beginning of peeling procedure to every patient and the degree of improvement is assessed by remeasuring the MASI score. Side effects if any and complained by the patient were noted and managed accordingly.

Statistical analysis

All data collected using a proforma were entered in Microsoft Excel sheet and a master chart was prepared. IBM SPSS version 22 was used for statistical analysis. All the data has been assessed and analysed statistically by Independent sample t-test, paired t-test and Chi-square A test.

RESULTS

Age distribution

In the present study, most of the patients (41.7%) were in the age group between 31-40 years, followed by 30% in the age group 20-30 years and then 16.7% in the age group 41-50 years and 11.70% were in age group >50 years (Figure 1). Mean age was 35.93±8.93.

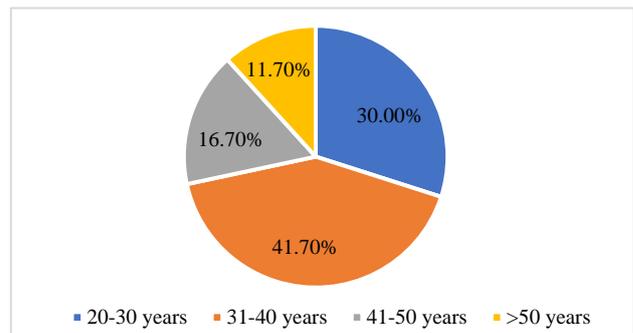


Figure 1: Age distribution.

Sex distribution

In the present study, females predominated constituting about 90% and males constituted 10%. The total female to male ratio was 9:1.

Family history

30% patients in this study gave a positive family history of melasma among first degree relatives.

Duration of illness

46.6% of patients had duration of illness >1 year followed by 40% of patients between 6 months and 1 year (Figure 2).

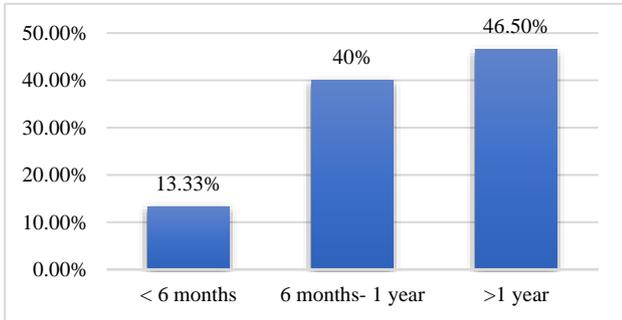


Figure 2: Duration of illness.

Aggravating factors

Sun exposure was aggravating factor for 23.33% of patients followed by cosmetics (10%) and oral contraceptives (OCPs) (6.66%) (Table 1).

Table 1: Risk factors.

Risk factors	No. of patients (%)
OCPs	2 (6.66)
Sunlight	7 (23.33)
Cosmetics	3 (10)
Pregnancy	1 (3.33)

Clinical patterns

In the present study, most commonly patients had malar pattern (78%), followed by centrofacial pattern (25%) and mandibular pattern (3.33%) (Figure 3).

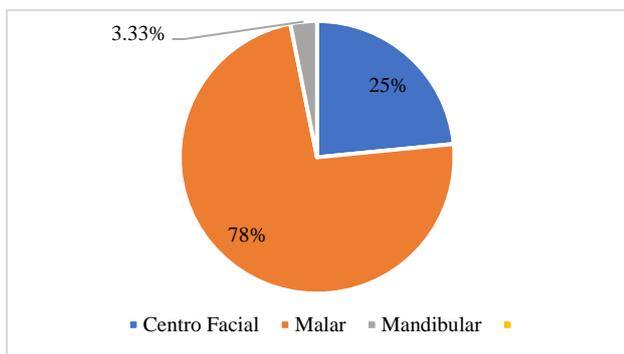


Figure 3: Pattern of melasma.

MASI scores

In the present study, melasma area severity index score improved from 12.97 to 4.69 with 63% reduction in MASI score (Table 2).

Table 2: MASI scores.

Follow up	MASI score
Before treatment	12.97±5.15
1st sitting	10.11±4.18
2nd sitting	7.66±2.96
3rd sitting	5.91±2.1
4th sitting	4.69±1.92

Adverse effects

Most common side effects seen were erythema in 13 patients (43%) and burning in 11 patients (36%) (Table 3).

Table 3: Adverse effects.

Adverse effects	No. of patients (%)
Burning	11 (36.60)
Erythema	13 (43.30)
Pigmentation	-
Milia	1 (3.33)



Figure 4: Clinical photographs showing improvement with 70% glycolic peel on (A and C) 1st sitting and (B and D) 4th sitting.

DISCUSSION

In this present study, peak incidence of melasma is seen in age groups between 30-40 years i.e. 25 members (41.70%) followed by age group between 20-30 years i.e. 18 members (30%) with 10 members (16.6%) between 40-50 years age group and 7 members (11.7%) above 50 years age group. This is similar to the study done by Khan et al where majority of Indian patients (64%) at the time of presentation were in age group between 30-40 years.⁶ Melasma was predominantly seen in females (90%) with female: male ratio was 9:1. This

predominance can be due to hormonal influence in females. Similar results were also seen in studies conducted by Kumar et al where female predominance was seen with female:male ratio 6.4:1.⁷

30% patients in this study gave a positive family history of melasma among first degree relatives which were similar to the studies done by Javaheri et al where 22% patients had positive family history.⁸ Majority of the patients (78%) were having malar pattern of melasma followed by centrofacial pattern and mandibular pattern. This study was similar to studies done by Kulandaisamy et al and Sardesai et al in which malar type was most common.^{9,10} Most of the patient's duration of illness was >1 year with 26.6% having sun exposure as aggravating factor which was similar to the studies done by Kalla et al where 28% of patients has history of sun exposure.¹¹ In a study conducted by Satish et al 39.05% had history of sun exposure.¹² In our study, majority of the participants (75%) were having Fitzpatrick skin type IV and 16.7% participants had skin type III and 8.3% participants had skin type V.

MASI scores were calculated before initiation of treatment and after initiation of treatment at 3 weeks, 6 weeks, 9 weeks and 12 weeks for a period of 3 months. Baseline MASI score was 12.97 ± 5.15 which was improved to MASI scores 10.11 ± 4.18 after 1st sitting, 7.66 ± 2.96 after 2nd sitting, 5.91 ± 2.17 after 3rd sitting and 4.69 ± 1.92 after 4th sitting. There is 63.70% decrease in MASI score with $p < 0.001$ which is statistically significant. Our study is nearly similar to a study, done by Kumari et al where there was 79% reduction of MASI score with glycolic peel.¹³ Goyal et al found 47% improvement with 70% glycolic peel.¹⁴

CONCLUSION

Though, 70% glycolic acid peel did not show excellent therapeutic response, it showed a satisfactory response at the end of 4th sitting in the treatment of melasma with statistically significant improvement in the MASI scores and with minimal adverse effects.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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Cite this article as: Sadagopan K, Chintakula N. Analysis of response of epidermal melasma to 70% glycolic acid peel. Int J Res Dermatol 2020;6:174-7.