CLINICAL STUDY OF MELASMA

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HOW TO CITE THIS ARTICLE:

ABSTRACT:
OBJECTIVES:
1) To know the incidence of melasma in both men and women.
2) To know the clinical types
3) To assess the efficacy of various modalities of treatment of melasma.

MATERIALS AND METHODS: A prospective study was conducted from 1.12.2006 to 30.11.2008 in C.G hospital and Bapuji hospitals attached to J.J.M.M College Davangere. The study was approved by the ethical committee of our hospital. 200 patients were studied and a detailed history was taken after taking consent from the patients the following regimens was followed.

Regime IA: Pre peeling with retinoic acid, hydroquinone and steroid cream + Glycolic acid peeling
Regime IB: Pre peeling with retinoic acid, hydroquinone and steroid cream + Trichloro acetic acid
Regime IIA: Sunscreens + hydroquinone Regime II B: Hydroquinone only
Regime III: Sunscreens + Azelaic acid,
Regime IV: Sunscreens + Hydroquinone + retinoic acid + fluorinated steroid.

RESULTS: Females were most commonly affected and use of cosmetic was the common aggravating factor. The malar type was the most common presentation and regarding treatment regimen IA and B was the most effective.

Regarding the response to treatment there was a significant improvement in Patients who were given pre peeling with Hydroquinone and Retinoic acid cream

Followed by chemical peeling with Trichloroacetic acid a Glycolic acid. In patients treated with fluorinated steroid + retinoic acid + hydroquinone there was also a considerable improvement. Compared to the above 2 regimens, in patients treated with Hydroquinone and azelaic acid cream, there was no much improvement.
**ORIGINAL ARTICLE**

KEY WORDS: Melasma; Females; Chemical peeling.

**INTRODUCTION:** Melasma is an acquired, circumscribed, pigmented disorder characterized by more or less symmetrically distributed, medium to dark brown macules with defined geographic borders, affecting the sun-exposed areas, particularly the forehead, cheeks, temples and upper lips\(^1\). Melasma of the face predominantly affecting women with multiple factors like high estrogen states (pregnancy, oral contraceptive therapy), genetic factors, sunlight, cosmetics, drugs and autoimmune thyroid disease implicated in its etiology.

This is a fairly common disorder reported to involve 8-10% of the general population. Though common in both sexes melasma is more common in females. Historically the treatment of melasma has been challenging and the various modalities of treatment include broad spectrum sunscreens, hydroquinone in various concentration, tretinoin, fluorinated steroids, kojic acid, salicylic acid, glycolic acid, azelaic acid, lactic acid, chemical peels, laser therapy like Q switched ruby, alexandrite, Nd; YAG laser etc. Cosmetics also assume an important role in the management of this condition as a temporary means of camouflage.

**Clinical features:** Melasma is characterised by the insidious development of a blotchy hyperpigmentation of the face. The hyperpigmentation is characteristically blotchy and is predominantly located on the forehead and malar eminences and to a lesser degree, sometimes on the lower portion of the cheeks, chin, the upper lip and the sides of the neck\(^2\). The condition is generally noticed first during the summer months. The lesions are usually multicentric and symmetrical from the beginning. As it spreads it may merge imperceptibly into the normal skin or it may also present as lesions with a distinct border, particularly in the infraorbital region and at the scalp margin. It is very unlikely of the lesion to present as a small lesion which spreads centrifugally. The scalp, ears, eyelids are usually spared. Also other sites such as mucous membranes, areolae of the breasts, axillary regions or external genitalia are not involved. Unusual presentations of melasma have been reported. A unilateral involvement of the face with the other half being normal has been reported\(^4\). Melasma of the forearms seems to be a relatively common sign. It may be more common in older people and especially in postmenopausal women on supplementary estrogen. The pigmentary change is macular and may be confluent or speckled. Like facial chloasma there is a sharp line of demarcation at the margins. In some there seems to be an element of erythema\(^5\). Tabata, et al reported a case of band like melasma on the median line of the forehead of a middle aged woman\(^6\). Based on the distribution of the facial lesions, melasma has been divided into 3 types.

**Centro facial:** involvement of the forehead, cheeks, upper lip and chin.

**Malar:** involvement of the cheeks and nose.

**Mandibular:** involvement of the rami of the mandible.

Western literature has always been consistent in putting the centro facial type as the most common variant. However in dark skinned individuals, malar type appears to be the commonest type. Even among Indians it has been observed that malar type is the commonest type\(^7\).

**Aim of the study:**

1) To study the incidence of melasma in both men and women.

2) To know the clinical types

3) To assess the efficacy of various modalities of treatment of melasma
**ORIGINAL ARTICLE**

**METHODOLOGY:** Two hundred patients presenting with melasma (after making a clinical diagnosis) attending the outpatient department of Dermatology and Venereology, at C.G. Hospital and Bapuji Hospital, attached to J.J.M. Medical College were selected. A detailed history was elicited with reference to the duration, onset, progression, family history, obstetric history, gynaecologic history, cosmetic history and previous treatment. Wood’s lamp examination was done. After making a diagnosis of melasma the patients were classified according to the clinical features. All patients were informed regarding the nature of disease, course, prognosis and the probable adverse effects of the treatment modalities. After taking consent from the patients the following regimens were followed;

**Regimen-I:** 50 patients were selected for chemical peeling i.e. 25 with glycolic acid and 25 with trichloroacetic acid. Patients were advised pre peeling with hydroquinone and retinoic acid for 3 weeks. All patients were advised sunscreens in the morning. During the peel programme after taking necessary precautions, patients were advised to wash his/her face with soap and water. The face was then cleaned with spirit. Then one coating of acetone was applied (in required concentrations) starting from forehead - right cheek – chin- left cheek, nasal bridge - nose - perioral area - upper and lower eyelids. The glycolic acid was applied for a particular time period i.e.1 minute, 2 minutes and 3 minutes in different concentrations. For trichloroacetic acid all the above procedure was same except that TCA was applied till frosting was seen. The patient was advised to clean his/her face with ice water for termination and neutralization.

**Regimen II:** 100 patients were inducted into this regime. 50 patients were advised hydroquinone with sunscreens and 50 patients were advised hydroquinone without sunscreens.

**Regimen-III:** Twenty five patients were taken in this group. There were advised sunscreens in the morning and azelaic acid cream at night.

**Regimen-IV:** Twenty five patients were taken in this group. They were advised sunscreen in the morning and a combination of retinoic acid + hydroquinone + fluorinated steroid at night.

All the patients were followed up at 3 weeks, 6 weeks, 12 weeks and 16 weeks.

During every visit, the results were graded as follows-

- Grade-I: Slight improvement, barely noticeable (<25%).
- Grade-II: Moderate improvement, noticeable (25-50%)
- Grade-III: Obvious improvement (50-75%)
- Grade-IV: Very marked improvement (>75%)

Finally, the results were analysed and tabulated.

**DISCUSSION: INCIDENCE:**

<table>
<thead>
<tr>
<th>Table 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total number of patients attending skin OPD At CG and Bapuji Hospital during year 2007.</strong></td>
</tr>
<tr>
<td><strong>Total number of melasma patients during same Period.</strong></td>
</tr>
<tr>
<td><strong>Incidence of melasma patients</strong></td>
</tr>
</tbody>
</table>

In the present study the incidence of melasma was found to be 3%. The exact incidence of melasma is unknown.
Types of melasma:

Table 2

<table>
<thead>
<tr>
<th></th>
<th>No of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MALAR</td>
<td>140</td>
<td>70</td>
</tr>
<tr>
<td>CENTROFACIAL</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>MANDIBULAR</td>
<td>00</td>
<td>00</td>
</tr>
</tbody>
</table>

Griffith et al \(^8\) in 1994 have reported in his study of 28 patients 73% having malar distribution. Griffith et al\(^8\) in 1994 have reported in their study of 30 black patients malar distribution in 73% which was in contrast to their previous study in whites, in which centro-facial was noticed in 72% of patients. Raja Babu\(^7\) in 1997 in his study has reported malar type as the commonest presentation in Indians. The review of all above studies indicates that the site of location of melasma is different in different parts of the world and also in different ethnic groups.

Response to glycolic acid Regimen/TCA Regimen:

Table 3

<table>
<thead>
<tr>
<th>Grade</th>
<th>Glycolic acid</th>
<th>Trichloroacetic acid</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of patients</td>
<td>%</td>
<td>No. of patients</td>
</tr>
<tr>
<td>Grade I</td>
<td>7</td>
<td>28</td>
<td>7</td>
</tr>
<tr>
<td>Grade II</td>
<td>9</td>
<td>36</td>
<td>7</td>
</tr>
<tr>
<td>Grade III</td>
<td>6</td>
<td>24</td>
<td>7</td>
</tr>
<tr>
<td>Grade IV</td>
<td>3</td>
<td>12</td>
<td>4</td>
</tr>
</tbody>
</table>

Kalla et al\(^9\) in 2001 in their study reported < 25% improvement in 27.9%, 25-50% in 22.1% 50-75% improvement in 19.1% and > 75% improvement in 30.9% patients with glycolic acid. Hurley et al\(^10\) in 2002 in their study of 18 patients reported slight improvement in 11.7% moderate improvement in 29.4%, obvious improvement in 47% and very marked improvement in no patients with glycolic acid. Thus the results with glycolic acid and trichloroacetic acid peeling are different in different authors and results were found to be more superior in comparison with most of them.

Response to hydroquinone:
Table 4

<table>
<thead>
<tr>
<th>GRADE</th>
<th>HYDROQUINONE WITH SUNSCREEN n = 50</th>
<th>HYDROQUINONE WITHOUT SUNSCREEN n = 50</th>
<th>TOTAL N = 100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of Patients</td>
<td>%</td>
<td>No. of patients</td>
</tr>
<tr>
<td>GRADE I</td>
<td>16</td>
<td>32</td>
<td>26</td>
</tr>
<tr>
<td>GRADE II</td>
<td>20</td>
<td>40</td>
<td>19</td>
</tr>
<tr>
<td>GRADE III</td>
<td>11</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>GRADE IV</td>
<td>6</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

Pathak et al.11 in 1986 achieved good to excellent results in 18% of patients. Hurley et al10 in 2002 noticed in their study of 18 patients slight improvement in 14.2%, moderate improvement in 57.1%, obvious improvement in 28% and very marked improvement in 0. Hurley et al10 in 2002 noticed in their study of 4 patients, slight improvement in 0, moderate improvement in 50%, obvious improvement in 50% and very marked improvement in 0%. In the present study also, like in most of the above mentioned studies in most of the patients there was mild to moderate degree of improvement in majority of the patients.

Response to Azelaic acid:

Table 5

<table>
<thead>
<tr>
<th>GRADE</th>
<th>No. of Patients n = 25</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade I</td>
<td>9</td>
<td>36</td>
</tr>
<tr>
<td>Grade II</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Grade III</td>
<td>5</td>
<td>20</td>
</tr>
<tr>
<td>Grade IV</td>
<td>1</td>
<td>4</td>
</tr>
</tbody>
</table>

Balina and Graupe12 in 1991 reported in their study of 164 patients showed improvement by 3 levels in 5% patients, by 2 levels in 31.6% patients, by 1 level in 47.5% patients and by < 0 levels in 15.9% patients. Bernal et al.13 in 2000 reported topical azelaic acid 15 to 20% can be as efficacious as hydroquinone.

As mentioned in the various studies response to azelaic acid is variable in different groups.
Response to combination of Hydroquinone, Tretinoin and a Fluorinated steroid:

Table 6

<table>
<thead>
<tr>
<th>Grade</th>
<th>No. of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade I</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>Grade II</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>Grade III</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>Grade IV</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Taylor et al.\(^{14}\) in 2002 in their study of 124 patients with moderately severe melasma 29% experienced clearing at 8 weeks, 51% had only mild melasma. 15% did not show any change from baseline. Taylor et al.\(^{14}\) in 2002 in their study of 37 patients with severe melasma at baseline 16% demonstrated clearing, 51% had only mild melasma. 24% had moderate disease and 5% no evidence of change. Thus the results of the present study are almost in concurrence with the above studies.

Comparison of various treatment Regimens:

Table 7

<table>
<thead>
<tr>
<th>Grade</th>
<th>Regimen I</th>
<th>Regimen II</th>
<th>Regimen III</th>
<th>Regimen IV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of patients</td>
<td>%</td>
<td>No. of patients</td>
<td>%</td>
</tr>
<tr>
<td>Grade I</td>
<td>14</td>
<td>28</td>
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</tr>
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<td>39</td>
</tr>
<tr>
<td>Grade III</td>
<td>13</td>
<td>26</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>Grade IV</td>
<td>7</td>
<td>14</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

Chi-square \((2) = 11.5\) \(p=0.24\) (NS)

Regime I > Regime IV > Regime III > Regime II

In the present study there was a significant improvement in patients who were given pre peeling with retinoic acid, fluorinated steroid and hydroquinone cream followed by chemical peeling with glycolic acid and trichloroacetic acid.

In patients treated with fluorinated steroid + retinoic acid + hydroquinone there was also a considerable improvement. Compared to the above 2 regimens, in patients treated with
hydroquinone and azelaic acid cream there was no much improvement. Lim and Tham\textsuperscript{15} in 1997 in their study of 10 Asian women reported more lightening of melasma with glycolic acid peels than with 2\% hydroquinone alone. Taylor et al\textsuperscript{14} in 2002 in their study of 641 patients reported complete or near complete clearing with combination of hydroquinone, retinoic acid and fluorinated steroid than with each of dual therapies. Thus the results of the present study are almost in concurrence with the above studies.

**CONCLUSION:** In the present study the incidence of melasma was 3\% which indicates that melasma is one of the common dermatological conditions. Like in majority of the studies malar pattern was the commonest type seen in this study. Regarding the response to treatment there was a significant improvement in patients who were given pre peeling with Hydroquinone and Retinoic acid cream followed by chemical peeling with Trichloroacetic acid and Glycolic acid. In patients treated with fluorinated steroid + retinoic acid + hydroquinone there was also a considerable improvement. Compared to the above 2 regimens, in patients treated with hydroquinone and azelaic acid cream, there was no much improvement. So the above all observations indicate that melasma is a common disease in the reproductive age group, more commonly seen during pregnancy and the condition has variable type of response to different modalities. It should not be forgotten that even though there was considerable improvement in the chemical peeling group side effects were considerably common in that group. Thus even today the treatment of melasma seems to be limited even though there are many modalities of treatment.

**BIBLIOGRAPHY:**


FIGURE: 1

RESPONSE TO CHEMICAL PEELING WITH GLYCOLIC ACID (PREPEELING WITH HYDROQUINONE + RETINOIC ACID)

BEFORE

AFTER 12 WEEKS
FIGURE: 2

RESPONSE TO CHEMICAL PEELING
WITH TRICHLOROACETIC ACID (PREPEELING WITH
HYDROQUINONE + RETINOIC ACID + STEROID)

BEFORE

AFTER 12 WEEKS