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# A STUDY OF ORAL TRENEXAMIC ACID IN TREATMENT OF MELASMA PATIENTS

Dermatology

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## ABSTRACT

Melasma is a common pigmentary disorder characterized by grey brown macules and patches on sun exposed skin. Many treatment modalities which include bleaching agents like retinoids, topical corticosteroids or superficial peeling agents have been tried alone or in combinations. Introduction of trenaxamic acid is a new concept. 50 patients clinically diagnosed as melasma after Wood's lamp examination were enrolled after taking informed consent. All patients were investigated for coagulation profile, complete blood picture and thyroid profile.
Each patient was given oral trenaxamic acid 250 mg twice daily after food for 3months along with instructions to apply topical broad spectrum sunscreen three times a day. They were followed up once in a month for another 3 months. MASI score was calculated initially and at each visit. Results were assessed clinically, photographically and by patient satisfaction. Out of 50, 48 patients had excellent improvement. Response was seen within 2 months of initiation of therapy.

## KEYWORDS

Melasma, oral trenexamic acid, MASI

## INTRODUCTION:

Melasma is a common pigmentary disorder. It is characterized by grey brown macules and patches on sun exposed skin. It commonly affects the cheeks, forehead, upper lip, nose, chin and occasionally forearms[!]. This disease is commonly observed in women [2]. Only 10% of cases occur in men. Although the cause of melasma is unknown, factors like genes, sex harmones, contraceptive pills, thyroid disease, cosmetics, photo toxic drugs like tetracyclines and anticonvulsants have been identified as common contributing factors in developing melasma [3]. Harmones, growth factors, chemical inflammatory mediators contribute to UV induced pigmentation by influencing the function of melanocytes.

Three clinical patterns of melasma were recognized: malar(most common), centrofacial and mandibular[4]. Melasma can be classified based on visible light examination, wood's light and also on histology. Epidermal melasma has increased pigment predominantly in basal and suprabasal layers of epidermis with pigment accentuation on wood's lamp. The dermal type has perivascular melanin laden macrophages in superficial and deep dermis and does not accentuate with wood's lamp. The mixed variety shows the features of both and appears as deep brown colour with wood's lamp accentuation of only the epidermal component.

Treatment of melasma is very frustrating. Many treatment modalities which include bleaching agents like hydroquinone, retinoids, topical corticosteroids or superficial peeling agents have been tried alone or in combination.

Introduction of trenaxamic acid is a new concept. Trenaxamic acid is a synthetic derivative of aminoacid lysine and is widely used as an anti fibrinolytic agent. It inhibits plasminogen- keratinocyte interaction which decreases tyrosinase activity leading to decreased melanin synthesis by melanocytes [5,6]. It has hypo-pigmentary effect in both oral and topical routes of administration and it also prevents UV induced pigmentation [7-9]. There are no obvious side effects except for GI reactions and oligo menorrhea [10].

## AIMS & OBJECTIVES OF THE STUDY:

To study the efficacy and safety of oral trenaxamic acid in the treatment of melasma in patients attending DVL department, Gandhi hospital, Secunderabad.

## MATERIAL & METHODS:

**Inclusion criteria:**

1. Patients between 18-55 years with moderate to severe melasma were included in the study.
2. Both Male and female patients were included in the study.

**Exclusion criteria:**

1. Pregnant and lactating mothers
2. Any chronic debilitating disorders, coagulation defects
3. Patients who has taken any medical or cosmetic treatment in last six months
4. Patients who are not willing to participate in the study

## METHODOLOGY :

1. 50 patients clinically diagnosed as melasma after wood's lamp examination were enrolled
2. They were investigated for Complete blood picture(CBP),thyroid profile, PT,APTT,CT and BT.
3. A detailed history was taken regarding etiological factors and family history of melasma
4. Each patient was given oral trenaxamic acid 250 mg twice daily after food for 3months. Instructions to apply broad spectrum sunscreen at 9am,12pm and 3 pm were given and also to avoid direct sun exposure. They were followed up for another three months to see any recurrences or any side effects.
5. Severity of hyperpigmentation was determined through MASI (Melasma Area Severity Score ) score determined by Kimbrough-Green etal was used for clinical assessment.

## RESULTS:

**Results of oral trenaxamic acid in melasma patients:**

- Out of 50 patients, 40 were female, 10 were male
- Mean age of onset was 35.07 years
- Mean duration of melisma before starting of oral trenexamic acid was 3 years (6 months-10 years)
- Family history was present in in 12 patients

Severity was assessed by MASI score

**1.Mean MASI:**

a) Before treatment -19.4
Highest -30.3
Lowest-10.8
b) After treatment-1.04
Highest- 3.6
Lowest-0

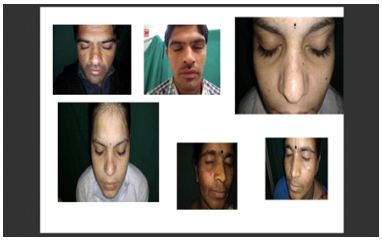
Significant decrease in mean MASI score was observed from baseline at 8 and 12 weeks

**2.Response to treatment:**

Out of 50 patients,48 patients had excellent improvement. 2 had moderate improvement
Response was seen within 2 months of initiation of trenexamic acid. Patients without family history had better response rate

**3.Rate of relapse**

15 patients (30%) had relapse of melasma within the 3 months of follow-up period. Patients with early age of onset and females had early relapse of melasma.



**Before and after photographs of oral trenexamic acid in our study**

**Table1**
Type of melasma depending on severity

| Type of melasma | |
|---|---|
| moderate | 36 |
| severe | 14 |

**Table2**
Distribution of melasma in our study

| | |
|---|---|
| frontal | 22 |
| Central facial | 40 |
| chin | 15 |

Side effects**:** only 6 patients developed transient side effects such as abdominal bloating

## DISCUSSION :

Melasma is a common disorder of Asians with a female preponderance Treatment remains a a challenge, and the search for safe, effective therapy continues. Since the use of oral trenaxamic acid was reported by Nijorin 1979, it has been postulated to be effective by modulating the vascular component of melasma.

Maeda and Tomitab found that oral trenexamic acid inhibits synthesis by inhibition of plasminogen/ plasmin system. Trenexamic acid (TA) isTrans-4 amino methyl cyclohexane carboxylic acid. It is a synthetic derivative of AA-Lysine. It's anti fibrinolytic activity does not interfere with blood clotting parameters. It prevents UV induced plasmin, thereby tyrosinase activity and reactive oxygen species(ROS) related proliferation of melanocytes, vessel number and also number of mast cells.

Our study found overall response rate of 100% with excellent improvement in 98% and moderate improvement in 2% with median of 2 months since commencement of treatment.

## CONCLUSIONS:

In our study ,we observed very encouraging results with oral trenexamic acid monotherapy as there is rapid and excellent clinical improvement of melasma Early recurrences were noted in few patients within the follow up period Oral trenexamic acid is very effective and safe with no obvious side effects

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