

A Studying the Etiological and Clinico-Epidemiological Variables in Melasma Patients at Tertiary Care Hospital of Middle Gujarat, India

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Abstract

Background: Melasma, previously known as chloasma, is an acquired pigmented condition, occurs most commonly on the face. It is more prevalent in females and darker skin type. It occurs due to increased melanogenesis.

Objectives: The objective is to study clinico-epidemiological and etiological factors in responsible for causation of melasma.

Methodology: This cross-sectional investigation was carried out over the course of a year. A total of 70 individuals with melasma who were clinically diagnosed included in the research. A thorough history was gathered, including information on the patient's demographics, prior medical history, family history, and a number of contributing variables. This cross-sectional investigation was carried out over the course of a year.

Results: Most common age group affected was 31-40 years (45.6%). The duration of disease ranged from 4 months to 8 years with a mean duration of 2.1 years. Of the 70 patients, 35 (50%) of females and 55 (79%) of males gave history of their melasma exacerbation during sun exposure. Out of 20 female patients, 8 (40%) of them reported their onset of melasma during pregnancy. Only 10% of the female patients took oral contraceptive pills during the disease process in our study. 4 patients (20%) used make-up on a regular basis. History of use of mustard oil in cooking/body massage was present in 11(55.07%) of females and 21 (42.14%) of male patients. 06 (52.05%) of female patients and 16 (32.0%) of males reported use of over the counter (OTC) products in the past.

Conclusion: Melasma's precise origin is uncertain. However, other variables have been linked to this disorder's etiopathogenesis. In our study, we discovered that melasma has a number of key risk factors, including sun exposure, pregnancy, oral contraceptives, cosmetics, Thyroid disorder variables, and family history.

Keywords: Melasma, Etiopathogenesis, Demography.

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Introduction

Melasma is a gained, even, and encompassed hypermelanosis giving light to dull earthy colored macules on the face and at times on the neck and forearms. [1,2] It is gotten from the Greek word "melas" significance dark, which alludes to its tanish clinical show. The pervasiveness of melasma is high in people of Asian, Latin American, and Hispanic beginning and in Fitzpatrick skin types III-V. [3] For the patient, melasma is a restorative issue with seriousness going from gentle pigmentation to extreme distorting hypermelanosis which might extensively affect the personal satisfaction. For the dermatologist, the greatest concern is its restorative trouble. Subsequently, understanding the etiology and pathogenesis of melasma is fundamental.

The exact cause is not known, but several factors contribute. These include sunexposure, pregnancy, cosmetics, family history, stress, emotional factors and OCPs [4,5]. Melasma has an inherited tendency and is usually diagnosed clinically. Histologically, the melanocytes are hypertrophied and show a greater number of dendrites and cytoplasmic organelles, which indicates higher metabolic activity. [6] There is an increased amount of melanin in all the layers of the epidermis, and an increased number of melanosomes. Treatment includes topical depigmenting agents like hydroquinone (2-4%), retinoic acid (0.1%) and steroids. [7]

Methodology

This was a cross sectional study conducted at Dermatology OPD of Parul Sevashram

hospital, Vadodara, Gujarat from June 2020 to June 2021 over a period of 1 year.

A total of 100 patients who were clinically diagnosed as melasma were enrolled in study. A detailed history regarding demographic details, past medical history, family history and various precipitating factors were taken.

Area and extent of involvement of melasma were also noted. The results of routine investigations like complete blood count, urine examinations, random blood sugar were recorded. Data were analyzed using SPSS (version 20) software. Descriptive statistics such as mean and standard deviation were used for continuous data, frequency and percentage were used for categorical data and a p value of < 0.05 was considered significant.

Exclusion criteria: The patients with post inflammatory hyperpigmentation, other pigmentary disorders with epidermal dermal pigmentation e.g. Nevus of Ota, Nevus of Ito, Mongolian spots and previous cases of melasma were excluded.

Results

The study comprised of 70 patients of melasma.

The age of the patients ranged from 20 to 50 years of both sex.

Most common age group affected was 31-40 years (45.6%).(Table 1)

The mean age of presentation was 30.1 years. The duration of disease ranged from 4 months to 8 years with a mean duration of 2.1 years.

Table 1: Age wise distribution of melasma patients

Age Group	Male (%)	Female (%)	Total(%)
20-30 yr	15 (12.75%)	03(3%)	18
31-40 yr	62 (52.7%)	10 (10%)	72
41-50 yr	08 (6.8%)	02 (02%)	10
	85	15	100(100%)

Table 2: Demographic distribution aetiological factors of study population

Characteristic	Number	Percentage(%)
Female :Male	20:50	0.4:1
Exacerbation with sun exposure	Male :35 Female:55	50 79
Onset during pregnancy	8	40
Positive family history	Male:14 Female:18	20 25
History of use of oral contraceptives	2	10
Regular use of make-up	4	20
Use of OTC	Male:16 Female:06	32 52
Use of mustard oil (cooking/body massage)	Male:21 Female:11	42 55

Of the 70 patients, 35 (50%) of females and 55(79%) of males gave history of their melasma exacerbation during sun exposure. (Table 2)

Out of 20 female patients,8 (40%) of them reported their onset of melasma during pregnancy.

Only 10% of the female patients took oral contraceptive pills during the disease process in our study.

4 patients (20%) used make-up on a regular basis. (Table 2)

History of use of mustard oil in cooking/body massage was present in 11(55.07%) of females and 21 (42.14%) of male patients.

06 (52.05%) of female patients and 16 (32.0%) of males reported use of over-the-counter (OTC) products in the past.(Table 2)

Discussion

The specific reasons for melasma are unknown, albeit some setting off factors are portrayed, like sun openness, pregnancy, utilization of oral contraceptives and different steroids, utilization of specific food things, ovarian growths, gastrointestinal parasitoses, hepatopathies, chemical substitution treatment, utilization of beauty

care products and photosensitizing medications, systems and incendiary cycles of the skin, and upsetting events.[8,9] This recommends that the advancement of melasma is affected by many factors, and relies upon the cooperation of ecological and hormonal impacts, with the defenseless hereditary substrate.

The average age of melasma patients was 30.1 years in our study, compared to 33.45 years reported in a study from the eastern population and 42.3 years, reported in a study from Singapore. [10]

Melasma is more common in women. but We found melasma in 71 % of men, compared to 19.87% in the study from the eastern population of India and 4.4% in a study from Singapore. [11]

There was significant association between age and gender. In our study we found out that melasma occur mostly in middle aged males than in females (χ^2 test= 11.083, $p=$ 0.011). This is similar to study done by Nanjundaswami *et al.* [12]

This study showed that the average duration of melasma was 2.1 years that is lower than reported in other studies.

In this study, 29% of patients had history of hypothyroidism, whereas in a previous study done by Achar *et al.* only 6.4% had thyroid disorder and in a multicentric study done in India, 11% of patients had hypothyroidism.^{9,1} This implicates a strong association between thyroid disorders and melasma. [13]

Cosmetic usage was implicated as a risk factor for melasma. 7% of patients in our study gave history of cosmetic exacerbation compared to Chandravathi *et al* [14]. who reported relatively higher incidence (13.3%). In our study 31.1% patients had history of exacerbation of melasma during pregnancy which was almost similar to Chandravathi *et al.* who reported 33% patients had positive correlation of melasma with pregnancy. Higher incidence of 51% was found in study done by Guinot C *et al.* [15]

History of Use of mustard oil in cooking/body massage was present in 55% in our study while in Arun Achar *et al*: 23.39 % [13], S Kumar, BB Mahajan, Nidhi Kamra *et al* [16]:15%. and in Katsambas *et al* [17]: 14%.

High estrogen and progesterone levels have been implicated in causing the melasma, based on frequent association of melasma with pregnancy, use of oral contraceptive pills and hormone replacement therapy in postmenopausal women. However, the mechanism of this interaction has not been fully elucidated. In vitro studies have shown that cultured human melanocytes express estrogen receptors (ERs) with higher expression in the facial areas as compared with other regions. This receptor distribution may explain the preferential location of melasma. [18] Estradiol increases the levels of tyrosinase, tyrosinase-related protein 1 and tyrosinase-related protein 2, the enzymes involved in human eumelanogenesis. [19] Although, estrogen has been hypothesized to be central in the pathogenesis only few

studies have been done to support the view. In our study, 40% of our female patients reported onset of melasma during pregnancy, which is higher than reported in previous studies (22.4%). History of use of oral contraceptives was present only in 2 (10%) of patients, but none reported precipitation/exacerbation of melasma with them.

Conclusion

Melasma's precise origin is uncertain. However, other variables have been linked to this disorder's etiopathogenesis. In our study, we discovered that melasma has a number of key risk factors, including sun exposure, pregnancy, oral contraceptives, cosmetics, Thyroid disorder variables, and family history.

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Ethical Approval: The study was done after permission of the institution Ethics committee.

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