

A clinico-epidemiological study of melasma in a tertiary care hospital: A cross sectional study

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Abstract

Background Melasma is a common acquired facial melanosis seen predominantly in females. It is characterized by symmetric reticulate hyperpigmented macules on the face. It is a cosmetic problem which affects the social and emotional well being of patients especially females. The treatment is unsatisfying, lesions usually resistant and recurrent.

Methods This was a cross sectional study conducted over a period of 1 year. A total of 200 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. Severity of melasma was assessed by Melasma Area Severity Index (MASI) score. Data were analyzed using SPSS version 20. Descriptive statistical tools like mean and Standard Deviation (SD) were used for quantitative variables; frequency and percentage for categorical variables. A p value of < 0.05 was considered as statistically significant.

Results Out of 200 patients, 167 patients were females and 33 patients were males with F: M ratio 5:1. Common age group affected was 41-50 years with a mean of 47 years. Majority were home makers. Significant family history was observed in 72% patients. 80% patients gave history of exacerbation with sun exposure. Exacerbation during pregnancy was noted in 31.1% and 66% patients gave stress as an exacerbating factor. 21% of patients gave history of hypothyroidism and 6% females gave history of Oral Contraceptive Pills (OCP) usage. 50.9% females were menopausal. Most common pattern observed was malar type. Statistical analysis revealed significant association between age and gender. Mean MASI was 4.6.

Conclusion The exact etiopathogenesis of melasma is unknown. In this study most common exacerbating factor observed are sun exposure and family history. Other factors such as hormonal factors, stress, pregnancy and OCP usage was also found to be associated with melasma.

Key words

Melasma, clinico- epidemiological.

Introduction

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

increased melanogenesis.¹ Melasma is a clinical diagnosis consisting of symmetric reticulate hypermelanosis in three predominant facial patterns: centrofacial, malar and mandibular.^{2,3} Centrofacial pattern involves the malar, frontal, chin, supralabial and nasal areas. The malar pattern includes the malar and nasal areas, and the mandibular pattern affects the respective region. Although less common, other sites may be involved such as the neck and arms, forming an extra-facial melasma.⁴ Melasma is not

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exclusive to any age, sex, or race. It is common in women of child-bearing age and also in dark-skinned patients of Hispanic, Asian and African origin.

Although the exact cause of melasma remains unknown, multiple factors seem to be contributing to its etiopathogenesis in women, including genetic factors, exposure to sunlight, pregnancy, oral contraception, hormonal therapies, thyroid dysfunctions, cosmetics, Anti-epileptic and phototoxic drugs. Of these factors, genetic influences and exposure to ultraviolet radiations are probably the most important causes.⁵ Melasma is a cosmetic problem, and in females it affects their social as well as emotional well being and their outdoor activities.^{6, 7} This study was aimed at assessing the clinical presentation, epidemiology and precipitating factors associated with melasma in a tertiary care hospital in north Kerala.

Material and Methods

This was a cross sectional study conducted over a period of 1 year from February 2016 – January 2017. The study population includes all patients with facial melasma attending outpatient department of Dermatology in a tertiary care centre in south India. An informed consent was taken and recorded on a standard proforma. The study was approved by institutional research and ethics committee.

All study population with melasma was screened and diagnosis was made on the basis of history and clinical findings. A detailed history regarding social and demographic details, past medical & family history, history of previous medications and aggravating factors were taken. Also menstrual history of female patients were taken. Severity of melasma was assessed by calculating MASI score.

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.

Results

Out of 200 patients enrolled 167(83.5%) were females and 33(16.5%) were males with male to female ratio of 1: 5. Most common age group of presentation was 41- 50 years followed by 51- 60 years.

Youngest age in our study was 26 and eldest was 70 year. 39% patients have duration of disease less than 1 year. Majority of population were home makers (53.5%) followed by employees. Only 20% were manual labourer (**Figure 1**).

21% had history of hypothyroidism and 72% showed positive family history. 50.9% females attained menopause. History of oral contraceptive pill usage was present only in 6% patients. 31.1% patients had pregnancy exacerbation. 160 patients had history of significant sun exposure out of which predominant exposure was intermittent type. Summer exacerbation was noted in 42.5% study population.

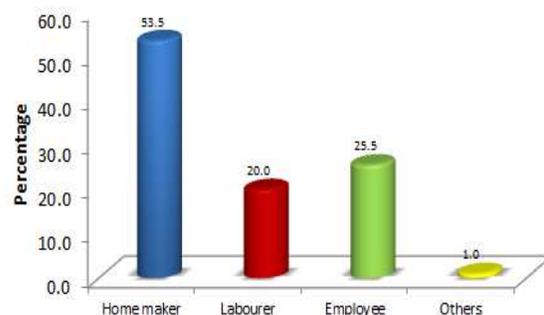


Figure 1 Percentage distribution of the sample according to occupation



Figure 2 Malar type of melasma



Figure 3 Centrofacial melasma

7% patients gave history of cosmetic exacerbation. 81.5% study population had Fitzpatrick skin type 4, 16.5% had type 3 and 2% had type 5 skin. Mean MASI was 4.6 ± 3.5 with minimum of 1.2 and maximum of 17.4. 76.5% have malar melasma and 23.5% have centrofacial melasma (**Figure 2 & 3**).

38% population had light brown colour suggestive of epidermal melasma and 23% had ashen grey colour suggestive of dermal melasma. 29% had dark brown colour suggestive of mixed melasma. For 10% patients we got unrecognized pattern (**Table 1**).

Table 1 Demographic data and aetiological factors of study population

Total sample size	200 patients
Mean age	47 years
Sex (F: M)	5: 1(167/33)
Mean duration of disease	2.9 years
Positive family history	72%
Exacerbation with sun exposure	80%
Stress	66%
Summer exacerbation	42.5%
Cosmetic usage	7%
Pregnancy exacerbation	31.1%
History of OCP use	6%
Menopausal status in females	50.9%
History of hypothyroidism	21%
Fitzpatrick skin type 4	81.1%
Mean MASI	4.6 ± 3.5
Most common distribution	Malar
Most common type	Epidermal

Discussion

The present study was a cross sectional study. Among 200 patients who were enrolled in the study, 167 patients were females and 33 patients were males. M: F Ratio in this study is 1:5. This is almost similar to study done by Nanjundaswamy *et al.* where M:F ratio was 1:4.⁸ Another study done by Achar *et al.* also showed similar female preponderance.⁹ whereas in a study conducted in Brazil and Singapore it was 1:39 and 1:21 respectively.^{10,11}

Most common age group affected was 41-50 (44.5%) followed by 51-60 years (27.5%). In a multicentric study in India, age group ranging from 30-39 years which was one decade lower than the present study was the most commonest age group affected.¹ Slightly lower age group was also noticed in a study done by Yalamanchili *et al.*, where the most common age group was 31-40 year (50%).¹² Mean age of patients was 47 ± 8.4 years. Study done by Jagannathan *et al.* also showed mean age of 40.53.¹³ A multicentric study conducted in India showed slightly lower mean age (37.2 ± 9.3).¹

Study done in Brazil also showed lower mean age (i.e., 27.5 ± 7.8).¹⁴ This difference may be due to ethnic and regional variations and variations in etiological factors like sun exposure.

There was significant association between age and gender. In our study we found out that melasma occur mostly in middle aged females than in males (χ^2 test= 11.083, $p= 0.011$). This is similar to study done by Nanjundaswami *et al.*⁸

In 20 – 50 age group female to male ratio is doubled compared to 50- 70 age group where it is almost equal. This emphasises the role of female hormones in the etiology of melasma.

9% patients have duration of disease less than 1 year.⁸ In this study, most of the patients were home makers (53.5%) followed by Office employees (25.5%). It may suggest hormonal and gender factors playing important etiological role in melasma. But in a study done by Yalamanchili *et al.* most common occupation was agriculture (65%) followed by skilled labours.¹²

In this study, 21% 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.

In this study, 72% patients had family history of melasma. Multicentric cross sectional study conducted in India showed 31.1% study population with positive family history.¹ In Yalamanchili *et al.* study, significant family history in 18% study population whereas in a study done by Achar *et al.* 33.3% had positive family history of melasma.^{12,9} Our study population had much higher positive family

history compared to other studies.

Out of 200 patients, 160 (80%) patients had significant sun exposure out of which 65.5% had intermittent type of exposure. This is almost similar to the study done by Nanjundaswami *et al.* where 64% patients had significant sun exposure.⁸ Study done by Jagannathan *et al.* showed lower percentage of significant sun exposure (22%).¹³ 42.5% patients gave history of summer exacerbation. All these indicate sun exposure as one of the most common exacerbating and causative factors of melasma. In our study majority were home makers. In our area, housewives indulge in both outdoor and indoor activities. So there is high chance of significant sun exposure which may contribute to development of melasma.

Another important aggravating factor was stress. We found that 66% patients had history of stress. Previous study done by Chandravathi *et al.* also reported stress in 53.3% patients as an aggravating factor.¹⁴ It may be due to increased expression of ACTH and MSH during stress which may enhances melanogenesis.

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.* who reported relatively higher incidence (13.3%).¹⁴

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

Table 2 illustrates the comparison between our study and other similar studies in terms of age and precipitating factors. Variation of results in

Table 2 Comparison of age and etiological factors between present study and similar studies

	Mean age	Sun exposure	Thyroid disorder	OCP use	Cosmetic use	Pregnancy exacerbation	Family h/o
Our study	47	80%	21%	6%	7%	31.1%	72%
Achar <i>et al.</i>	33.45	55.1%	6.41%	18.4%	23.39%	13.6%	33.3%
Chandravathi <i>et al.</i>	39.9	86%	50%	46.6%	13.3%	33.3%	53.3%
Nanjundaswami <i>et al.</i>	36.64	64%	-	12%	36%	-	35%
Yalamanchili <i>et al.</i>	37.13	44%	-	2.8%	-	-	17.9%

different studies might be due to difference in genetics and ethnicity of study population.

Mean MASI score in this study was 4.6± 3.5. This is almost similar to study done by Yalamanchili *et al.* where mean MASI score was 5.7. Minimum MASI score in this study was 1.2 and maximum was 17.4.

Most common pattern of melasma observed was malar type, followed by centrofacial type. None of the patients had mandibular pattern. This is similar to the study done by Nanjundaswami *et al.* where they got malar pattern as most common pattern.⁸ Study done by Yalamanchili *et al.* also showed malar predominance.¹² But in a study done by Achar *et al.* and multicentric cross sectional study in India, centrofacial pattern was the predominant pattern.^{9,1}

On clinical evaluation, 76 patients had light brown colour suggestive of epidermal melasma. 46 patients had ashen blue colour suggestive of dermal melasma and 58 patients had colours not fitting with any of the above.

Study limitation Hormonal status and the MELASma Quality Of Life scale (MELASQOL) was not assessed. Since its a single center study, generalization of the results to a larger geographic population may be difficult.

Conclusion

The etiology of melasma is multifactorial. Those with significant sun exposure and family

history are more prone to develop melasma. Females are the vulnerable gender. Pregnancy, stress, thyroid disorders and OCPs have association in causation of melasma. Most common pattern observed in north Kerala is malar, epidermal type.

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