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Original Research Article

A Clinico – Dermoscopic Study of Melasma

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Abstract

Background: Melasma is a common, acquired hyperpigmentation disorder characterized by irregular brown patches on sun-exposed areas, particularly the face. The exact pathogenesis of melasma remains unclear, but it is believed to be multifactorial, involving genetic predisposition, ultraviolet radiation, hormonal influences, and other environmental factors. Dermoscopy, a non-invasive diagnostic tool, offers enhanced visualization of skin surface and subsurface structures, aiding in the assessment and differentiation of pigmented lesions.

Aim and Objectives: To evaluate the clinical features and dermoscopic patterns of melasma to better understand its pathophysiology, improve diagnostic accuracy, and guide therapeutic decisions.

Materials and Method: A cross-sectional observational study was conducted on patients clinically diagnosed with melasma. Detailed clinical examination and dermoscopic evaluation were performed on all participants. The dermoscopic findings were documented and analyzed to identify common patterns and their correlation with clinical features.

Results: The study included 100 patients with melasma, predominantly affecting females (83%). Nearly 74% of the patients had malar type of melasma were present. Majority of the patients had their morphological typer was dermal, followed by epidermal and mixed.

Conclusion: Dermoscopy proves to be a valuable tool in the assessment of melasma, offering insights into its heterogeneity and aiding in distinguishing it from other pigmented lesions. The identification of specific dermoscopic features can enhance diagnostic accuracy and potentially guide personalized treatment strategies. Further studies are warranted to establish standardized dermoscopic criteria for melasma and to explore its implications for patient management.

Keywords: Melasma, Dermoscopy, Hyperpigmentation, Clinical Features, Diagnostic Accuracy.

Introduction

Melasma is a common, acquired hypermelanosis that typically affects sun-exposed areas of the skin, particularly the face. It is characterized by symmetrical, hyperpigmented macules and patches that vary in color from light brown to dark brown. The condition predominantly affects women, especially those of reproductive age, and is more prevalent among individuals with darker skin types (Fitzpatrick skin types III–VI). The pathogenesis of melasma is multifactorial, involving genetic predisposition, ultraviolet (UV) radiation, hormonal influences, and other environmental factors.

Despite its benign nature, melasma poses significant psychosocial impacts due to its chronic and recurrent course and the conspicuous appearance of the lesions. This cosmetic disfigurement can lead to emotional distress, diminished self-esteem, and reduced quality of life. Therefore, understanding the clinical and dermoscopic characteristics of melasma is essential for accurate diagnosis, effective management, and patient education.

Dermoscopy, also known as epiluminescence microscopy or dermatoscopy, is a non-invasive diagnostic tool that enhances the visualization of subsurface skin structures not visible to the naked eye. This technique has been extensively used in the evaluation of pigmented skin lesions, including melanocytic nevi and melanoma. In the context of melasma, dermoscopy provides valuable insights into the pigmentation patterns and vascular

components, facilitating differentiation from other facial hyperpigmentary disorders such as post-inflammatory hyperpigmentation, lentigines, and exogenous ochronosis.

The clinical presentation of melasma varies, and its diagnosis is primarily based on history and physical examination. However, clinical examination alone may not sufficient to determine the depth of pigmentation, which is crucial for tailoring treatment strategies. Dermoscopic examination can complement clinical assessment by revealing specific features such as a pseudo-network, annular-granular pattern, and perifollicular pigmentation, which aid in distinguishing melasma from other pigmentary disorders.

Several treatment modalities are available for melasma, including topical agents (such as hydroquinone, retinoids, and corticosteroids), chemical peels, laser therapy, and microneedling. The choice of treatment depends on the type and depth of pigmentation, patient skin type, and response to previous therapies. Dermoscopy can guide therapeutic decisions by providing detailed information on the extent and nature of pigmentation.

This study aims to explore the clinico-dermoscopic features of melasma to enhance understanding of its clinical presentation and improve diagnostic accuracy. By correlating dermoscopic findings with clinical features, this research seeks to establish a more comprehensive approach to the management of melasma, ultimately improving patient outcomes and satisfaction.

Materials and Method

The study was a cross-sectional observational study. conducted in the Department of DVL, Bhaskar Medical College and Hospital. In the study total 100 patients with all melasma patients attending out-patient department of dermatology, for the duration of one year, after meeting exclusion and inclusion criteria and after approved by institutional review board.

Inclusion Criteria

1. All untreated patients with melasma attending OPD, BGH.
2. Patients of all age groups and both gender.
3. Patients willing to give consent for examination and photographs.
4. Patients presenting with chloasma during pregnancy.

Exclusion Criteria

1. Patients who are not willing to participate in the study.

Method

For each patient detailed history was taken, complete general, physical & cutaneous examination was done. In all the patients hand held woods lamp examination was done to evaluate the type of melasma. In all patients dermoscopic examination with 4th generation Dermlite DL4 Polarized Dermoscope with 10x magnification was done to enumerate dermoscopic features of melasma.

Modified Melasma area and Severity index (MASI) scoring method

Frontal	30%
Malar	15%
Chin	05%

$0.15(A)(D+H)+ 0.30(A)(D+H) + 0.05(A)(D+H)$

A = AREA, D = DARKNESS, H = HOMOGENITY

Area

0	=	No Involvement
1	=	< 10
3	=	10-29
4	=	30-49
5	=	50-69
6	=	70-89
7	=	90-100

Darkness

0	=	Absent
1	=	Slight
2	=	Mild
3	=	Marked
4	=	Severe

Statistical Analysis

Collected data were entered in the MS Excel 2016, for further statistical analysis, Categorical data were expressed interms of frequency and proportion, while quantitative data were expressed interms of mean and standard deviation. Discriptive statistics were found out. SPSS Version 25 were used for statistical analysis

Observation and Results

In this cross-sectional observational study was done among 100 melasma patients attending the out-patient department of DVL, satisfying inclusion and exclusion criteria during the study period were included and their outcomes as given bellow.

Table 1 : Demographic profile distribution among study population

Parameters	Frequency	Percentage
Age		
≤ 20 Years	6	6
21 -30 Years	52	52
31 - 40 years	34	34
≥ 40 Years	8	8
Gender		
Male	17	17
Female	83	83
Type of Melasma		
Malar	74	74
Centrofacial	26	26
Mandibular	0	0

Above table showed that, majority of the patients were from age group of 21-30 years and 31-40 years of age, and also there were majority of the patients were female compared to males. Nearly 74% of the patients had malar type of melasma were present.

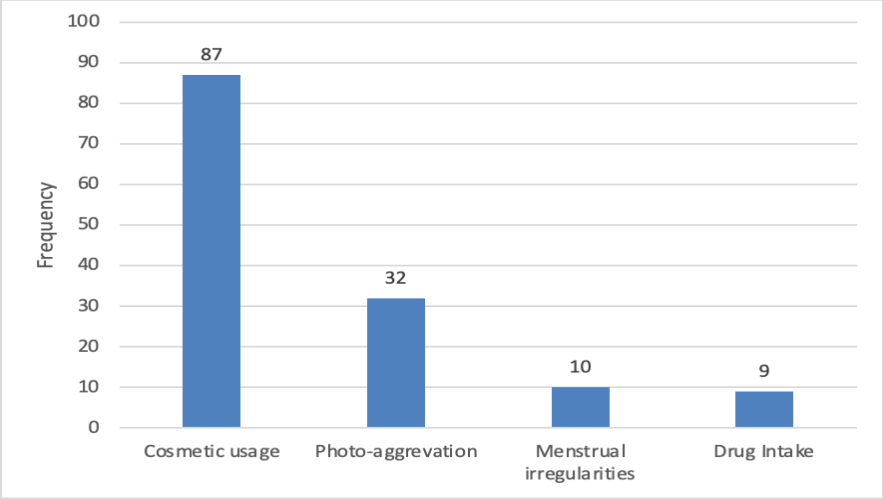

Figure 1 : Distribution of impending factor among study population

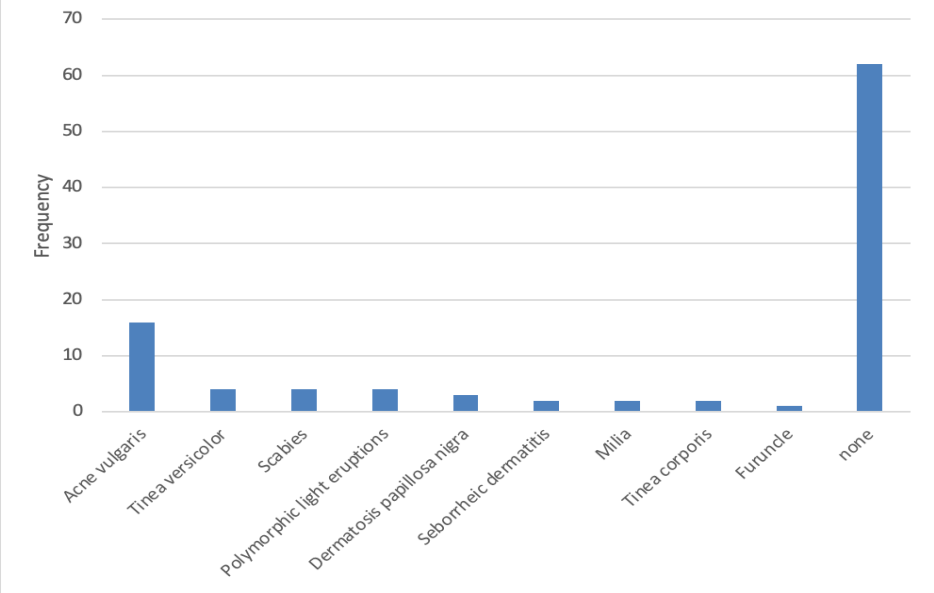

Figure 2 : Distribution of dermatological lesion among study population

Table 2 : Distribution of morphological type among study population

Morphological Type	Frequency	Percentage
Epidermal	38	38
Dermal	51	51
Mixed	11	11

Majority of the patients had their morphological typer was dermal, followed by epidermal and mixed as shown in above table.

Table 3 : Distribution of MASI Score among study population

MASI Score	Frequency	Percentage
0 - 9.99	10	10
10 - 19.99	64	64
20 - 29.99	26	26
Mean ±SD	16.27 ±5.42	

In present study, 64% of patients had MASI 10 to 19.99 followed by 26% of patients had MASI 20 to 29.99 and 10% of patients had MASI 0 to 9.99.

Table 4 : Distribution of Dermoscopic findings among study population

Dermoscopic findings	Frequency	Percentage
Reticular network	38	38
Reticulo-globular pigmentation	11	11
Blue grey pigmentation	51	51
Fine granules	49	49
Pseudo reticular	62	62
Telangiectasia	64	64
Scattered sparing islands	24	24

Dermatoscopic examination 38% of patients had reticulo-globular pigmentation, 11% of patients had reticulo-globular pigmentation, 51% of patients had blue grey pigmentation, 49% of patients had fine granules, 62% of patients had pseudo reticular pigmentation, 64% of patterns telangiectasia and 24% of patients had scattered sparing islands.

Discussion

Melasma is generally asymptomatic; however, the psychological association of melasma with feelings of embarrassment, frustration, negative perception of appearance, and impaired interpersonal relationships has been established, signifying the need for improved diagnostic means, treatments, and continued research. [1]

Early diagnosis allows for timely treatment, improved quality of life, and prevention of the development of dermal melasma, which is more difficult to treat. Although diagnosis is straightforward, melasma can sometimes be difficult to differentiate from other facial pigmentary disorders. Skin biopsy as a means of diagnosis is not preferable, because of possible scarring on the face. Using dermoscopy, a noninvasive method that mitigates scarring and aids in diagnostic accuracy, could therefore improve patient outcomes and satisfaction.

The increasing utility of dermoscopy in diagnosing melasma can be partially attributed to its ability to visualise and magnify structures throughout the epidermis and the superficial layers of the dermis that are not visible to the unaided eye. [2-4]

In this cross-sectional observational study was done among 100 melasma patients attending the out-patient department of Dermatology, Venereology and Leprosy (DVL) In the present study we have observed that, majority of the patients were from age group of 21-30 years and 31-40 years of age, and also there were majority of the patients were female compared to males. Nearly 74% of the patients had malar type of melasma were present.

In a study done by Kaur S et al showed that the mean age of the patients was 34.86years, in the same study female were showed predominance, also in the same study majority of patients (54%) had malar pattern followed by 46% of patients had centro-facial pattern of melasma [5]. In a study done by Yalamanchili R et al showed that majority of patients (46%) belong to age group of 31 to 40years with minimum age of 20years and maximum age of 68years and majority of the patients were females compared to males [6]. In a study done by Rosalina M et al showed that majority of patients (75%) belongs to age group of 30 to 49years [7] In a study done by Shanavaz AA et al showed that 69.1% of

patients were females whereas 30.9% of patients were males, in the same study majority of patients (65%) had centro-facial pattern followed by 44% of patients had malar pattern and 1% of patients had mandibular pattern of melasma [8]. In a study done by Amatya B et al showed that 71.6% of patients were females whereas 28.4% of patients were males [9]

In the present study impeding factors were, uses of cosmetics, photo-aggrevation, menstrual irregularities and drug intake In a study done by Kaur S et al showed that 84% of patients had exposure to sunlight followed by 58% of patients had history of usage of cosmetics and 41% of patients had history of drug intake. In a another study done by Rosalina M et al showed that all the patients had history of drug intake and 87.5% of patients had history of cosmetic usage.

In the present study additional dermatological lesions were observed in 38% of patients whereas 64% of patients had no dermatological lesions. Acne vulgaris was observed in 16% of patients, also in the study 51% of patients had dermal type of melasma whereas 38% of patients had epidermal melasma and 11% of patients had mixed type of melasma. In a study done by Amatya B et al showed that 44.7% of patients had dermal type followed by 38.3% of patients had mixed type and 17% of patients had epidermal type of melasma. In a study done by Rosalina M et al showed that 79.2% of patients showed epidermal type and 20.8% of patients showed dermal lesions.

In present study, 64% of patients had MASI 10 to 19.99 followed by 26% of patients had MASI 20 to 29.99 and 10% of patients had MASI 0 to 9.99. In a study done by Kunninpuram RM et al showed that the mean MASI score in the patients was 4.670. [10] In a study done by Monisha BM et al showed that majority of patients had MASI score of 6 to 10(51.6%) followed by 25.8% of patients had MASI score of more than 10 and 22.5% of patients had MASI score of 0 to 573. [11]

Conclusion

From our observation and results and after discussion with another studies we can conclude that, reproductive age group (21 to 30years) with female predominance (83%). 74% of patients had malar type of melasma and 26% of patients had centro-facial type of melasma. Cosmetic usage, dermal/mixed type of melasma were majority factors observed in the study. Majority of patients had MASI 10 to 19.99, and finally we can conclude that, Dermatoscope helps in diagnosis and prognosis of melasma. Therapeutic efficacy of various modalities can be monitored using dermatoscope. It has reduced the need of invasive interventions like biopsy from face for histopathology.

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