Original Research Article

A Clinico-epidemiological Study on Melasma: A Prospective Observation

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Abstract

Background: Melasma is an acquired heightened pigmentation of the skin, illustrated by gray-brown symmetricalpatches, mainly in the sun-exposed areas of the skin. The pathogenesis is unknown, but genetic or hormonal influenceswith UV radiation are essential.**Objectives:** To study the clinico-epidemiological pattern and theprecipitating factors in melasma.**Materials and Methods:** A total of 310 patients were enrolled for thestudy over a period of one year. Consecutive sampling technique was used, and the study period was from January 2019 to December 2019. SPSS 22 was used for analysis.**Results:** The mean age of patients with melasma was 33.35 years, ranging from 14 to56 years. There was female preponderance with a female to male ratio of approximately 4:1. The mean age of onsetwas 28.99 years, with the youngest and oldest being 11 and 48 years, respectively. The patients sought medical treatmenton an average of 3.69 years after appearance of melasma. About 55.32% of our patients reported that their diseaseexacerbated during sun exposure. Among 250 female patients, 60 reported pregnancy and 46 reported oral contraceptivesas the precipitating factors. A positivefamily history of melasma was observed in 100 (33.34%) patients. Centrofacial was the most common pattern (55.47%)observed in the present study. **Conclusion:** The precise cause of melasma isunknown. However, many factors have been associated in theetiopathogenesis of this disorder.

Keywords: Clinical, epidemiological, melasma, contraceptives, genetic,radiation.

Introduction

Melasma is a common, acquired hypermelanosis that occurs in sun-exposed areas, mostly on the face, occasionally on the neck, and rarely on the forearms. The term, 'chloasma' is often used to describe melasma developing during pregnancy; but the pigmentation never appears to be green, therefore the term, 'melasma' is preferred[1]. The exact prevalence of melasma is unknown in most of the countries. Melasma is a very common cutaneous disorder, accounting for 0.25 to 4% of the patients seen in Dermatology Clinics in South East Asia and is the most common pigment disorder among Indians [2,3]. The disease affects all races, but there is a particular prominence among Hispanics and Asians[4]. Although women are predominantly affected, men are not excluded from melasma, representing approximately 10% of the cases[5].The exact causes of melasma are unknown. However,multiple factors are implicated in its etiopathogenesis,mainly sunlight, genetic predisposition, and role of female hormonal activity. Genetic factors are also involved, as suggested by familial occurrence and the higher prevalence of the disease among Hispanics and Asians. Other factors incriminated in the pathogenesis of melasma include pregnancy, oral contraceptives, estrogen progesterone therapies, thyroid dysfunction, certain cosmetics, and phototoxic and anti-seizure drugs[6]. The hyperpigmented patches may range from single to multiple, usually symmetrical on the face and occasionally V-neck area. The centrofacial pattern is the most common pattern and involves the forehead, cheeks, upper lip, nose, and chin.The malar pattern involves the cheeks and nose. The mandibular pattern involves the ramus of the mandible.Using the Wood's light examination, melasma can be classified into four major histological types depending upon the depth of pigment deposition[7]. The epidermal type, in which the pigmentation is intensified under Wood's light, is the most common type. Melanin is increased in all epidermal layers. This study is aimed at studying the epidemiology, clinical presentation, and precipitating and / or provocation factors associated with melasma.

Materials and Methods

The present study was carried out on the clinic-epidemiology of melasma patients between January 2019 and December 2019. Three hundred and ten consecutive patients with a clinical diagnosis of melasma were enrolled.for the study. The demographic data regarding age at present, age of onset of melasma, sex, duration of the disease, and family history were noted. The data of different predisposing factors like sun-exposure, pregnancy, cosmetics, ovarian tumour, and other endocrinal diseases were included, and relevant investigations were carried out to rule out the same.Clinical evaluation was done and varying upon the distributions of lesions, they were split into centrofacial,malar, or mandibular. Wood's light examination was doneto ascertain the histological pattern.

Statistical Analysis-Continuous variables were expressed as mean withstandard deviation (SD). Categorical variables wereexpressed as absolute numbers and proportions.SPSS -VERSION 22 SOFTWARE was used for analysis. A Pvalue of < 0.05 was considered statistically significant.

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Results

Table 1:Demographic details of Study Participants (N=310)

Variables		N (%)
Mean age		33.35 years
Sex	Males	50 (16)
	Females	250 (84)
Mean duration of melasma		3.59 years
Mean duration of onset		28.9 years
Family history of melasma	Positive	100 (33.34)
	Negative	210 (66.66)

As per table 1 There were 250 females and 60 males with an age range of 14 to 56 years. It was more common in women, with a female to male ratio of 4:1 approximately. It mostly presented after the third decade of life. The mean age of onset of melasma was 28.99 years, ranging from 11 years to 48 years. Most of them sought medical treatment only 3.59 years after the appearance of their melasma. A positive family history of melasma was observed in 100 (33.34%) patients.

Table 2:Distribution of Lesion and Pattern

Type of lesion	N(%)
Centrofacial	187 (60.3)
Malar	114 (36.7)
Mandibular	9 (3)
Pattern of Lesion under Wood's Light Examination	
Dermal	197 (64)
Epidermal	83 (27)
Mixed	30 (9)

According to table 2 three clinical patterns of melasma were observed and among these, the centrofacial type was the most common: seen in 187 (60.3%) cases. Other types noted were malar 114 (36.7%) and mandibular nine (3%), respectively. Under the Wood's light examination dermal was the most common pattern seen in 197 (64%)patients; and in 83 and 30 cases, the patterns were epidermal and mixed type, respectively.

Table 3: Precipitating Factors for Melasma

Precipitating factor		N (%)
Pregnancy	Yes	69 (22)
	No	241 (78)
Sun exposure	Yes	170 (55)
	No	140 (45)
OCPs	Yes	42 (14)
	No	268 (86)
Cosmetics	Yes	83 (27)
	No	227 (73)
Hypothyroidism	Yes	20 (6)
	No	290 (94)

As per table 3 170 gave a history of their melasma exacerbation during sun-exposure and the remaining 140 patients did not notice any exacerbation of their disease. Out of 250 female patients, 69 (22%) of them reported that their disease precipitated during pregnancy and only 14% of the female patients took oral contraceptive pills during the disease process in ourstudy, and no patients had ovarian tumors. Eighty-three patients (27%) used different types of cosmetics on a regular basis (at least five days in a week). There was no other autoimmune disease noted, except hypothyroidism in 20 patients out of 310 cases of melasma.

Discussion

Melasma is an acquired heightened pigmentation of the skin. It is a commonly seen unit in clinical practice. Few studies show that melasma accounts for 4 – 10% of the new cases in the dermatology hospital, as a referral[8,9]. Equally it is found to be the third most popular pigmentary disorder of the skin, confirmed in a survey of 2000 black people, at a private clinic in Washington DC[10].The average age of melasma patients was 33.35 years inour study, compared to 42.3 years, reported in a studyfrom Singapore[11].A positive family history was observed, 33.34%, in the present study, which was in correlation with an earlier reported study, in which it varied from 20 to 70%[12,13].Multiple causative factors have been involved in the etiology of melasma, including, ultraviolet light (sunlight),hormones (oral contraceptives), and pregnancy. There appears to be an upsurge in the number and activity of melanocytes in the epidermis of patients with melasma.The melanocytes appear to be functionally altered[14]. We have noticed that about 55% of our patients had sunexposure, which they felt was an aggravating factor. It is in great contrast to Pathak's report, which suggests that sunlight exacerbates melasma in all patients[15].In this study only 22% of the female patients noted pregnancy as a precipitating and aggravating factor, respectively. Only 14% of them were taking oral contra-ceptives during their disease process, which wasnot related to the precipitating or aggravating symptoms /signs. These figures are lower than those reported earlier[15]. Few other studies have also reported a minimum relation with either pregnancy or oral contraceptives [14,15].According to the distribution of the lesions we recognized three clinical patterns and among these, centrofacial was the most common, like other studies from India and abroad [12,16].However, studies from Singapore and South India observed that malar distribution was the most common[11,16] This variation

of results might be due to environmental or regional differences. Under the Wood's light examination, we found that the dermal type was the most common, in contrast to an earlier study, which suggested that the epidermal variety wasthe most common[17].

Conclusion

Females were affected more commonly as compared to males. Although we did not find the exact cause of melasma, we noticed that sun-exposure,pregnancy, and taking of oral contraceptive pills could precipitate or exacerbate the melasma. We found that some of our patient's disease was associated with autoimmune disease,mainly thyroid dysfunction.These findings suggest some genetic connotation in the development of melasma.

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