ORIGINAL RESEARCH PAPER

Dermatology

KEY WORDS: Hyperpigmentation, Hypermelanosis, Face, Psychosocial impact, Melasma, Sun exposure.

CLINICO EPIDEMIOLOGICAL PROFILE OF FACIAL MELANOSIS IN A RURAL TERTIARY CARE HOSPITAL - A CROSS SECTIONAL STUDY

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ABSTRACT

Introduction: Facial melanosis is a group of pigmentary disorders characterised by altered pigmentation occurring over the face. Genetic, environmental and hormonal factors play a crucial role in the pathogenesis of these disorders. They cause cosmetic disfigurement and negative psychosocial impact especially among females. **Aims:** To determine the epidemiological factors and clinical patterns of various types of facial hypermelanosis. **Materials And Methods:** A cross-sectional observational study conducted over a period of 18 months in a rural tertiary care hospital. All patients presenting with complaints of hyperpigmentation over face were recruited. Demographic data and detailed clinical history was taken and cutaneous examination was carried out. Relevant investigations like skin biopsy were carried out and results were recorded. **Results:** In this study there were 217 patients of facial melanosis. Females outnumbered males with a female : male ratio of 2.28:1. Maximum patients were between 20 and 29 years of age. Most of the patients were farmers and home makers employed in agriculture. The most common facial melanosis observed were melasma followed by post inflammatory hyperpigmentation. Sun exposure was the most common aggravating factor in melasma. Acne vulgaris was the most common cause for post inflammatory hyperpigmentation. **Conclusion:** A variety of hyperpigmentary disorders, with variable clinical presentations and precipitating factors were encountered. Since the patients belonged to rural area, predominantly employed in agriculture, phototanning and PIH following phyto photo dermatitis were observed in higher numbers compared to other studies.

INTRODUCTION:

Facial melanosis is a heterogenous group of disorders with an abnormal pigmentation over facial region causing significant cosmetic disfigurement and psychological morbidity. It includes disorders with both hyperpigmentation and hypopigmentation. Facial hyperpigmentation occurs in a variety of clinical entities including melasma, freckles, Riehl's melanosis, seborrheic melanosis, lichen planus pigmentosus, facial acanthosis nigricans, exogenous ochronosis, post inflammatory hyperpigmentation.[1] Although there are several studies about facial hypermelanosis, very few studies are from rural areas. Excessive sun exposure among farmers, use of cosmetics, topical steroids and over the counter topical products in resource poor rural settings have complicated the clinical presentation of facial melanosis in rural areas. Hence this study was conducted to determine the clinical and epidemiological factors of facial hypermelanosis in patients living in rural area.

METHODS:

A cross-sectional observational study was carried out in the Dermatology OPD of a rural tertiary care hospital. Ethical clearance was obtained from the Institutional Ethics committee. A written informed consent was obtained. Periodic sampling was used i.e all patients presenting to Dermatology OPD from December 2019 to May 2021 with complaints of hyperpigmentation over face and giving consent were recruited into the study. Patients not giving consent were excluded. After collecting demographic data, detailed clinical history regarding onset, duration, progression of the disease, predisposing factors such as prolonged sun exposure, pregnancy, use of cosmetics, hair dye usage, history of atopy, history of drug intake including OCPs, over the counter drugs, history of skin lesions prior to the pigmentation were recorded. A thorough cutaneous and systemic examination was carried out. Fitzpatrick skin type was recorded. Clinical photographs were taken after obtaining consent. Statistical analysis was done using Microsoft Excel and presented in number and percentages.

RESULTS:

In our study there were 217 patients of facial hyperpigmentation. Females outnumbered males with 151 females and 66 males (F:M ratio =2.28:1). Maximum number of patients were between 20 and 29 years of age. The youngest patient was 2 year old girl and the oldest was 70 years old male patient. The mean age of presentation was 31.6 years. Majority of the patients i.e 74 (34.1%) were in the age group of 20 to 29 years. Distribution of patients based on age of presentation is given in table 1. Fitzpatrick skin types III, IV and V included 4.6%, 63.2% and 32.2% respectively (Table 2). The various facial melanosis encountered in our study are as in table 3.

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Table 1: Age Group Of Presentation

Age group	Number	Percentage (%)
0 to 9	3	1.38
10 to 19	31	14.28
20 to 29	74	34.10
30 to 39	57	26.26
40 to 49	32	14.74
50 to 59	15	6.91

60 to 69	4	1.84
70 to 79	1	0.45
Total	217	100

Table 2: Fitzpatrick Skin Type Of Patients With Facial Melanosis

Fitzpatrick skin	Number	Percentage (%)
3	10	4.6
4	137	63.2
5	70	32.2
Total	217	100

Table 3: Facial Melanosis

Facial melanosis	Number of patients	Percentage (%)
Melasma	67	30.87
Post inflammatory hyperpigmentation (PIH)	57	26.26
POH	18	8.29
Freckles	11	5.06
LPP	4	1.84
Tanning	14	6.45
AN	16	7.37
Lentigines	2	0.92
PV	9	4.17
Reihls melanosis	6	2.76
Seborrheic melanosis	6	2.76
Exogenous ochronosis	3	1.38
Maturational hyperpigmentation	4	1.84
Total	217	100

DISCUSSION:

Out of 217 cases of facial melanosis, majority were females with with female : male ratio of 2.28 : 1.This finding was similar to Agarwal P et al who also found female preponderance with female : male ratio of 2.5: 1.[2] Female predominance in facial melanosis may be due to increased consciousness among females about skin colour and is also linked to hormonal changes. Changes in estradiol levels lead to increased pigmentation in females. Appearance of new lesions or exacerbation of old lesions during pregnancy, lactation and oral contraceptive therapy in women are some of the likely reasons for high incidence among them.

The age group of patients ranged from 2 years to 70 years. Mean age of presentation was 31.6 years. Most of our patients i.e 74 (34.1%) were of the age group of 20-29 years.This was in concordance with Amatya B et al who found most of the patients in the age group of 16-35 years with a mean age of 32.7 years.[3] High incidence of facial hyper melanosis in this age group may be due to increased awareness about physical appearance, peer pressure, society and marriage pressures to look fair.

In this study Fitzpatrick skin types III, IV and V included 4.6%, 63.2% and 32.2% patients respectively. Gupta M also reported patients to be of skin types III to V.[1] Mutalik SD et al reported that their patients had Fitzpatrick skin Types IV or V.[4] Melasma (Figure 1) was the most common facial melanosis found in this study with 30.87% patients. Our finding was similar to Bharathi G et al who reported melasma in 32.6% patients.[5] Out of 67 patients of melasma, 50 (74.62%) were females and 17 (25.37%) were males with female: male ratio of 2.9:1. Increased incidence among women was also reported by Hassan I et al who found female : male ratio of 5.6:1.[6] The most common subtype of melasma was centrofacial (46.2%), followed by malar (40.29%) and mandibular (13.43%). These results were similar to that of Hassan I et al who also found centrofacial type to be the most common subtype, seen in 71 (75.5%) cases, followed by malar type of melasma, seen in 23 (24.4%) cases.[6] In contrast, Abrol S et al found malar type as the commonest type (43%) followed by centrofacial (32%) and mandibular (25%).[7] Sunlight exposure, pregnancy and usage of oral contraceptive pills (OCPs) were some of the aggravating factors for melasma found in this study. Since the patients in the study were from rural areas and their primary occupation being agriculture, most of them reported aggravation of melasma with sun exposure. Similar results were obtained by Abrol S et al in their study, who found that prolonged sun exposure was the major aggravating during working in fields among rural women or travelling as part of their occupation.[7] Exposure to ultraviolet rays have been found to be crucial in various studies as it leads to increased levels of various hormones such as alpha melanocyte- stimulating hormone, corticotrophin and interleukin (IL)-1 which, in turn results in increased melanin production.[7,8] Other studies reported exacerbation of melasma during pregnancy and OCPs owing to the role of hormones.[2,6,7]

Post inflammatory hyperpigmentation (PIH) was the next common condition encountered in this study. Any kind of inflammation in the skin can lead to hyperpigmentation, which is known as post inflammatory hyperpigmentation. Inflammation of skin leads to production of various cytokines, prostaglandins and leukotrienes which further stimulate the synthesis of melanin, thus resulting in PIH.[7] Out of 57 (26.26%) patients with PIH, 21 (36.84%) were males and 36 (63.15%) females which was similar to Rao C et al.[9] Majority of the patients 30 (52.63%) belonged to 19-30 years age group which was also similar to Rao C et al.[9] Abrol S et al also found PIH as the next most common cause of facial melanosis in 25.7%.[7] In the present study, acne vulgaris with 19 (33.33%) patients was the most common cause for PIH (Figure 2). Grade II acne (16) was the most common followed by grade III (2) and grade I (1). Other studies also found acne as the most common cause of PIH.[6,7]

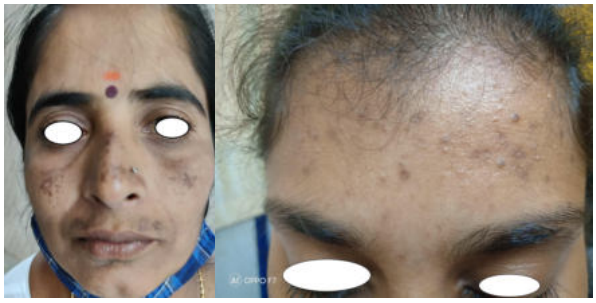

Figure 1: Melasma - Brown macules on malar area

Figure 2: Post inflammatory hyperpigmentation on forehead due to acne vulgaris

Steroid facies (4 patients) and phytophotodermatitis (1 patient) were the next most common causes for PIH in the present study. Due to lack of Dermatologists in rural areas, patients consult general physicians for their skin disorders. Physicians invariably prescribe topical steroids. Misuse of these steroids lead to steroid facies and rebound pigmentation. Since most of the population in rural area is engaged in agriculture, the incidence of phytophotodermatitis was high, which on resolution leaves behind pigmentation. Other causes for PIH according to this study were, tinea faciei (3), trauma (3), post varicella (2), polymorphic light eruption (1), pemphigus vulgaris (1) and herpes zoster ophthalmicus (1) (Figure 3).

Periorbital hyperpigmentation (Figure 4) was seen in 18 patients (8.29%) patients including 7 (38.88%) males and 11 (61.11%) females. Some of the associated factors for POH were inadequate sleep, refractive errors and atopy. Hassan et al reported similar number of cases (6.7%) of POH.[6] Refractive errors cause fatigue of periorbital muscles. This plays a significant role in the causation of POH.[10] Unlike the present study, few studies also found iron deficiency anemia to be associated with POH. Hassan et al also found 14.28% patients with POH had associated iron deficiency anemia.[6] One study found as high as 50% of patients with POH had iron

deficiency anemia.[11] Another study found that genetic predisposition, exposure to laptops and mobiles and airborne contact dermatitis were responsible for POH.[7]

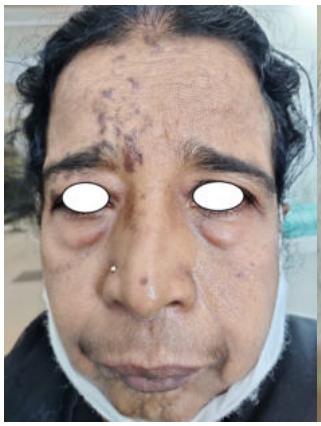

Figure 3: Post inflammatory hyperpigmentation on forehead due to Herpes Zoster

Figure 4: Peri orbital hypermelanosis

Facial acanthosis nigricans (Figure 5) was found in 16 (7.37%) patients, out of which, males were 4 (25%) and females were 12 (75%) and most of them were aged between 31 and 45 years. In a study done by Shah AN et al, acanthsois nigricans was present in 8% of patients which was similar to our study.[12] Patients in the present study had hyperpigmented and thickened plaques over the temple, forehead and periorbital areas. They also presented with thickened hyperpigmented velvety plaques over the neck, axilla and groin. All these patients had obesity of various grades. In a study done by Rao C et al risk factors like diabetes mellitus and irregular menstrual cycle were associated with AN.[9] In the present study, however, risk factors were not documented.

Freckles (Figure 6) were found in 11 patients (5.06%). Out of this, 2 (18.18%) were males and 9 (81.81%) were females. Most of the patients belonged to age group of 19-30 years. All these patients complained of darkening of lesions on sun exposure. Comparable to the present study, another study reported freckles in 3% of the patients.[9]

Lentigines (Figure 7) was seen in 2 patients. They present as light brown macules, similar to freckles but unlike freckles, lentigines may occur on the mucosa also.

Figure 5: Facial acanthosis nigricans - hyperpigmented velvetty plaque on temple

Figure 6: Freckles - Brown macules on malar area and nose

Figure 7: Lentigines - brown macules on malar area and lips

Facial acanthosis nigricansPhototanning was found in 14 (6.45%) patients in our study. Among this,10 (71.42%) were males and 4 (28.57%) were females. Similar incidence was reported by Raveendar et al who found 5.8% patients with phototanning.[13] Another study reported 4% photomelanosis.[14] Since our hospital is located in rural area, most of the patients here are agriculturists and outdoor workers. Hence there is a higher incidence of phototanning in comparison to other studies.

Lichen planus pigmentosus (LPP) (Figure 8) is a variant of Lichen planus, with an unknown etiology and characterised by asymptomatic or mildly itchy diffuse, slate grey pigmentation. It usually begins over photo distributed sites such as face and neck, suggesting that UV radiation may play a pathogenic role. The pigmentation then gradually spreads to involve other body parts.[15] It is reported mostly from the Indian subcontinent and the Middle Eastern countries.[16,17] In the present study there were 4 (1.84%) patients, out of which 2 (50%) were males (Figure 9) and 2 (50%) were females. The age group of presentation was 31-45 years. In one of these patients, the etiology was drug induced. Forehead, and temple were involved in most of them. face and neck were involved in one patient. Similar distribution of pigmentation was reported by Sobhankumari et al.[15] Unlike the present study, few studies have found higher percentage of cases of LPP (4.8%, 7%, 4.1%).[6,15,16] However, the age of presentation in the present study (3rd decade to 6th decade) correlates with other studies.[6,16,17]

Pityriasis versicolor is a superficial fungal infection caused by Mallasaezia furfur. Clinically it presents as both hypo and hyperpigmented macules and patches which are asymptomatic. Lesions predominantly occur over the seborrheic areas like chest, and back. They can also be seen over the neck and lower part of the face. The hypopigmented variety is more common. We included those cases presenting with hyperpigmentation over the face. There were 9 (4.17%) cases. All these patients did not have any symptoms like itching or burning sensation.

In the present study Riehl's melanosis was seen in 6 (2.76%) patients. Out of this, 4 patients had pigmentation over the entire face and two patients had pigmentation over the forehead and temple areas. The pigmentation was brown in 3 patients and blue grey in 3 patients. All patients had a history of usage of cosmetics. Findings in this study are similar to two other studies who reported 1.05% and 2% respectively.[5,7] On the contrary, few authors have reported a much higher percentage (5.7%, 20% and 8%) of patients with Reihl's melanosis.[6,9,12]

Seborrheic melanosis was seen in 6 (2.76%) patients. These patients had brownish pigmentation over nasolabial fold. Some of them had pigmentation around the mouth below the lower lip.

Maturational hyperpigmentation is a recently described facial melanosis. It is a part of the spectrum of cutaneous marker of metabolic syndrome similar to facial AN with which it shares a few morphological features. It can be differentiated clinically from facial AN by certain specific features like relatively softer surface, finer granularity and indistinct margins.[18] Maturational hyperpigmentation was seen in 4 (1.84%) patients in this study. Since it is a relatively newly described entity, only a few cases have been described in literature.[18]

Exogenous ochronosis (Figure 9) was found in 3 (1.38%) patients. The patients had used over the counter triple combination creams containing hydroquinone, tretinoin and mometasone for a long duration without supervision. Lesions were brownish hyperpigmented patches on malar area and cheeks. The findings of this study was similar to that reported by Abrol S et al (1.4%) and Sobhankumari et al (1%).[7,15] However, Shah AN et al in their study found a higher percentage (12%) of cases.[12]

Limitations of this study are that the sample size was small and dermoscopy was not done to diagnose the cases.

CONCLUSION:

Facial hypermelanosis is commonly encountered by dermatologists and has multiple patterns. Various lifestyle

and occupational and environmental factors influence the onset and progression of facial melanosis. Therefore it is pertinent to have a comprehensive understanding and information about these factors for better management. In the rural set up, farmers being exposed to plant allergens, chemicals and sunlight are more at risk of developing facial melanosis. Hence, educating them regarding ways to protect themselves from facial melanosis is the need of the hour.

Author Declaration:

Financial or Other Competing Interests: None Was informed consent obtained from the patients: Yes For any images presented appropriate consent has been obtained from the patients:Yes

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