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Original Article

Dermatology Section

Clinical and Dermoscopic Evaluation of Melasma in Men- An Observational Study at a Tertiary Health Care Centre in Western Odisha, India

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ABSTRACT

Introduction: Melasma is one of the most common cause of facial hypermelanosis presenting as symmetrical hyperpigmented macules over sun exposed areas especially in women and sizeable proportion in men causing a detrimental effect on the quality of life.

Aim: To evaluate the clinical profile and dermoscopic features of melasma in men.

Materials and Methods: A single centre hospital-based observational cross-sectional study was conducted at Veer Surendra Sai Institute of Medical Sciences and Research (VIMSAR), Burla, Odisha, India, from November 2018 to October 2020. 245 men, clinically diagnosed with melasma were included in the study with due consent and evaluated for age, family history, skin type, drug intake history, duration, duration of sun exposure, disease pattern, Melasma Area Severity Index (MASI) Score and dermoscopic feature. Data was collected using questionnaire, managed by Microsoft excel 2016 and analysed using Statistical Package for Social Sciences (SPSS) 20.0.

Results: Melasma occurred most commonly in the age group of 31-35 years (37.9%) with mean age of occurrence being 34.5±7.9 years affecting most commonly Fitzpatrick skin type IV (47.3%). There was positive family history in 63 patients (29.7%) and history of Diabetes Mellitus (DM) type 2 in 24 cases (9.7%). There was increased occupational sun exposure in 93% of cases with average duration of exposure being 7-8 hours/day in 98 cases (42.9%). The most common clinical pattern observed was malar pattern in 156 cases (63.6%) and epidermal dermoscopic pattern in 128 cases (52.2%). Majority of cases had a MASI Score between 5-10 with mean being 8.7±7.7. On comparing MASI Score and sun exposure, the average sun exposure was highest for a MASI Score 20-25 i.e., 7.4 hours/day.

Conclusion: The most common age group affected by melasma in males is 20-40 years, with prevalence being greater in higher Fitzpatrick skin type (III, IV), with positive history of occupational sun exposure and positive family history. The severity of melasma in form of MASI score was formulated. The knowledge acquired through the study can help bridge the knowledge gap to improve its management and quality of life.

Keywords: Fitzpatrick skin type, Hyperpigmentation, Melanin, Melasma area severity index

INTRODUCTION

Normal skin colour is determined by a number of chromophores, the most important of which is melanin. Regulation of human melanocytes to determine the skin colour is complex: in addition to a direct stimulatory effect of Ultravoilet (UV) radiation, also, the effects mediated by endocrine, paracrine and autocrine factors [1]. Melasma is identified by the presence of symmetrical, irregular, light to dark brown macular hyperpigmentation involving sun-exposed areas like cheek, forehead, chin and upper lip [2,3]. Melasma is frequently seen in women (90%) with pregnancy or use of oral contraceptives in their reproductive years [3-5]. Upto 10% of cases, diagnosed as melasma all over the world, occur in men. Prevalence of melasma in men in India is 20.5% [6]. Contrary to the popular belief, in present scenario there is an expansion in concern among men regarding their physical appearance. This has resulted in increased number of men with melasma seeking medical attention. Melasma in men is a source of cosmetic concern and affects their quality of life in a negative way having a Dermatology Quality Life Index (DQLI) of 7.5 [7]. Melasma has a significant impact on appearance, causing psychosocial and emotional distress, causing a major setback in the quality of life of the patients [8].

In addition, there is no previous study in this region of Odisha to show the clinicoepidemiological and dermoscopic profile of melasma in men in contrary to huge number of studies in females. Therefore, the aim of this study was to evaluate the clinical profile and dermoscopic features of melasma in men at a tertiary care centre in Western Odisha, India.

MATERIALS AND METHODS

This was a single centre hospital-based observational cross-sectional study conducted at Veer Surendra Sai Institute of Medical Sciences And Research (VIMSAR), Burla, Odisha, India, from November 2018 to October 2020. The study was conducted after obtaining ethical clearance from the Institute of Ethical Committee vide letter number 059/18-I-S-060/dt 25.01.19.

Inclusion criteria: All men of age 20-60 years attending Out Patient Department (OPD) of Department of Dermatology and Venereal Diseases who were clinically diagnosed as Melasma were included in the study.

Exclusion criteria:

- Patients exposed to previous intervention like laser or any topical steroid mixed cream in the last six months, patients with hyperpigmentation over face from childhood like nevus.
- Patients who are known case of any other photosensitive disorders like systemic lupus erythematosus or porphyria, patients who were taking drugs known to cause hyperpigmentation such as minocycline, chloroquine or on any kind of hormonal therapy were excluded from the study.

Sample size calculation: Estimation was done using the formula:

$$z^2*P*(1-P)/M^2$$

Where z=1.96

P=Prevalence of melasma in men in India=0.20 [6]

(1-p)=0.80

Margin of error (M=0.05)

So, (1.96×1.96)×(0.20×0.80)/0.05×0.05=245

Study Procedure

All patients clinically diagnosed as melasma in OPD were evaluated for clinicoepidemiological features like age, Fitzpatrick skin type, duration of disease, duration of sun exposure, family history of disease, association with drug or chronic disease, socio-economic status as per modified Kuppuswamy's socio-economic scale [9], morphological and dermoscopic pattern of disease, MASI score of the disease. The Fitzpatrick skin type classification has six different skin types, skin colour, and reaction to sun exposure which ranges from very fair (skin type I) to very dark (skin type VI) depending upon whether the patient burns at the first average sun exposure or tans at the first average sun exposure [10].

The MASI score was calculated by assessment of three parameters: Area (A), darkness (D), and homogeneity (H) of involvement where in forehead (f) constitutes 30%, right malar region (rm) 30%, left malar region (lm) 30%, and chin (c)10%. The MASI score is calculated by adding the sum of the severity grade for darkness and homogeneity, which is then multiplied by the value of area of involvement. Similar pattern was repeated for each of the four facial areas. The total score range is 0-48 [11]. Higher score implies higher severity of the disease.

The following formula was used for calculation:

MASI total score=0.3A (f) {D (f)+H (f)}+0.3A (lm) {D (lm)+H (lm)}+0.3A (rm) {D (rm)+H (rm)}+0.1A (c) {D (c)+H (c)} [11].

STATISTICAL ANALYSIS

The data was collected via means of a questionnaire and presented as means, proportion and percentage. The data was managed using Microsoft excel 2016. The data was analysed by using SPSS 20.0 and presented in form of proportion, percentage and mean.

RESULTS

Out of 16576 male patients attending Dermatology OPD 1016 patients were diagnosed with melasma. Thus, the prevalence of melasma among males in this study was found out to be 6.12%. The age group visibly affected was the adult population with age range of 20-45 years. Most of the patients in this study were in the age group 31-35 years 93 patients (37.9%) followed by age group 41-45 years, 47 patients (19.1%) with mean age of the cases to be 34.53±7.92 years [Table/Fig-1].

S. No.	Age (in years)	No. of cases
1	20-25	28 (11.4%)
2	26-30	34 (13.8%)
3	31-35	93 (37.9%)
4	36-40	28 (11.4%)
5	41-45	47 (19.1%)
6	46-50	06 (2.4%)
7	51-55	05 (2.0%)
8	56-60	04 (1.6%)

[Table/Fig-1]: Showing the age distribution of the patients in the study (n=245).

In this study, majority of the patients, 76 patients (31% of cases) belonged to lower middle socio-economic group followed by 66 patients (26.9% of cases) belonged to lower socio-economic status as per modified Kuppuswamy's socio-economic scale [Table/Fig-2].

S. No.	Socio-economic status	No. of cases
1	Lower	66 (26.9%)
2	Upper lower	48 (19.5%)
3	Lower middle	76 (31%)
4	Upper middle	40 (16.3%)
5	Upper	15 (6.1%)

[Table/Fig-2]: Showing socio-economic status of all the patients in the study (n=245).

Among the cases in this study, 116 patients (47.3%) had Fitzpatrick skin type IV and 109 patients (44.4%) had Fitzpatrick skin type III and 20 patients (8.3%) had Fitzpatrick skin type V [Table/Fig-3].

S. No.	Fitzpatrick skin type	No. of cases
1	Skin Type I	0
2	Skin Type II	0
3	Skin Type III	109 (44.4%)
4	Skin Type IV	116 (47.3%)
5	Skin Type V	20 (8.3%)
6	Skin Type VI	0

[Table/Fig-3]: Showing the Fitzpatrick skin types of the patients (n=245).

In this study, 228 patients (93% of the cases) had history of occupational sun exposure whereas in 17 patients (7%) there was minimal sun exposure but exposure to heat at work place for sizeable duration of the day. Among the 228 cases with positive occupational sun exposure, maximum cases 98 (42.9%) had sun exposure of 7-8 hours/day [Table/Fig-4].

S. No.	Duration of sun exposure (hours/day)	No. of cases
1	1-2	38 (16.6%)
2	3-4	49 (21.4%)
3	5-6	32 (14%)
4	7-8	98 (42.9%)
5	9-10	11 (4.8%)

[Table/Fig-4]: Showing duration of sun exposure among the patients (n=228).

In this study, positive family history i.e., presence of melasma in 1st degree relative was found in about 72 cases (29.7%), majority of the patients, 60 had history of herbal product application (24.4%) [Table/Fig-5]. It was seen that 24 patients (9.7%) had associated type 2 diabetes mellitus and 5 patients (2%) had associated thyroid disorder (hypothyroidism). It was also seen that 20 cases (8.1%) had associated Chronic kidney disease (CKD) and 25 cases (10.2%) had sickle cell disease (24.4%) [Table/Fig-6].

S. No.	Association	No. of cases
1	Nil	67 (27.3%)
2	Topical steroid	35 (14.2%)
3	Steroid containing depigmenting agent	31 (12.6%)
4	Non steroidal depigmenting agent	10 (4.0%)
5	Herbal products	60 (24.4%)
6	Counter irritants	42 (17.1%)

[Table/Fig-5]: Showing the history of application of various products before development of melasma (n=245).

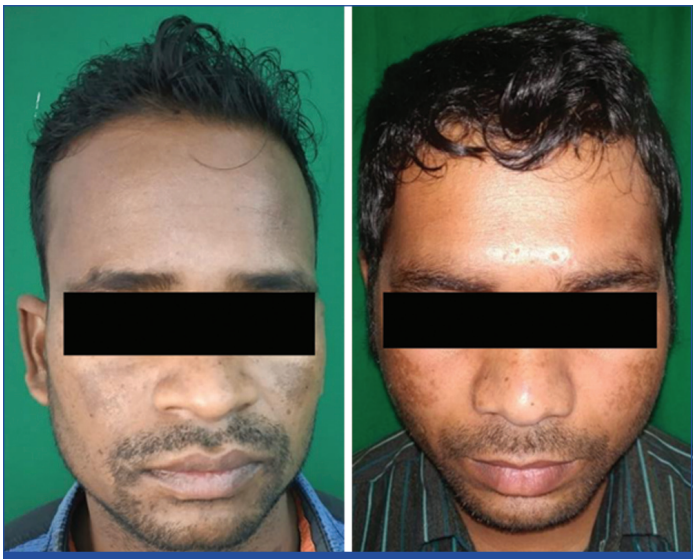
S. No.	Association	No. of cases
1	Nil	171 (69.7%)
2	Type 2 diabetes mellitus	24 (9%)
3	Thyroid disorder	05 (2%)
4	Chronic kidney disease	20 (8.1%)
5	Sickle cell disease	25 (10.2%)

[Table/Fig-6]: Showing associated diseases in the patients (n=245).

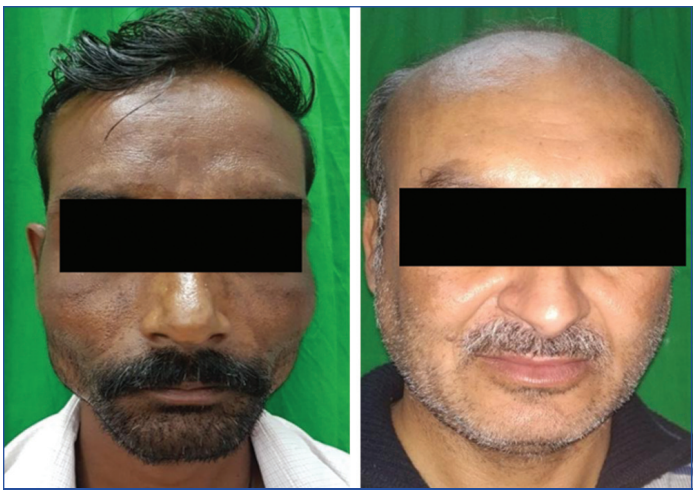
In this study, utmost number of patients 124 (50.6% of cases) presented within one year of occurrence of the disease followed by 81 patients (33%) presented within 1-2 year of the disease due to the high cosmetic and psychosocial stress associated with the disease [Table/Fig-7]. Majority of cases i.e., 156 cases (63.6%) of cases had malar pattern of melasma [Table/Fig-8] whereas 82 cases (33.5%) of cases had centro-facial pattern of melasma [Table/Fig-9] and 7 cases (2.9%) of cases had mandibular pattern of melasma [Table/Fig-10]. Majority of cases i.e., 128 cases (52.2%) had epidermal type of melasma [Table/Fig-11] on dermoscopic examination, 73 cases (29.7%) cases had mixed type of melasma [Table/Fig-12] and 44 cases (17.9%) of cases had dermal type of melasma [Table/Fig-13].

S. No.	Duration (in years)	No. of cases
1	<1	124 (50.6%)
3	1-2	81 (33%)
4	>2-3	21 (8.5%)
5	>3-4	9 (3.6%)
6	>4-5	7 (2.8%)
7	>5	3 (1.2%)

[Table/Fig-7]: Showing duration of disease in the patients (n=245).

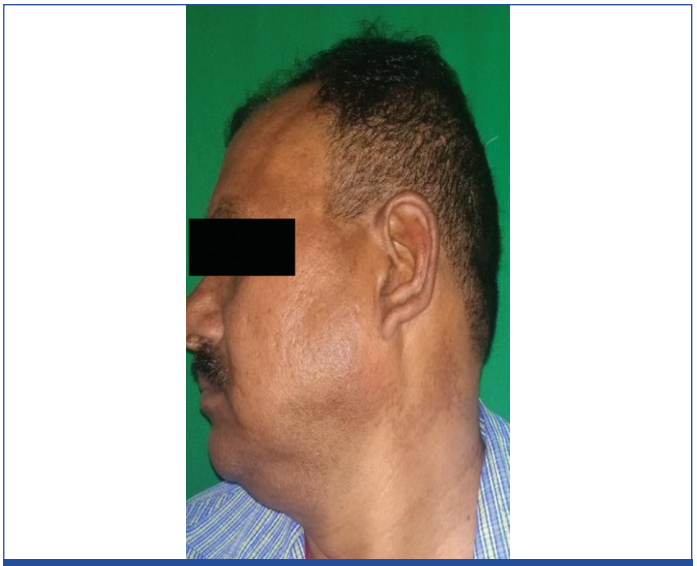


[Table/Fig-8]: Clinical patterns of melasma (malar).

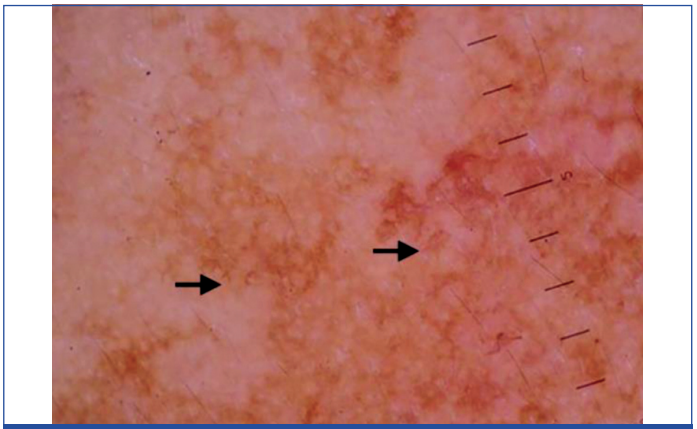


[Table/Fig-9]: Clinical pattern of melasma (centro facial).

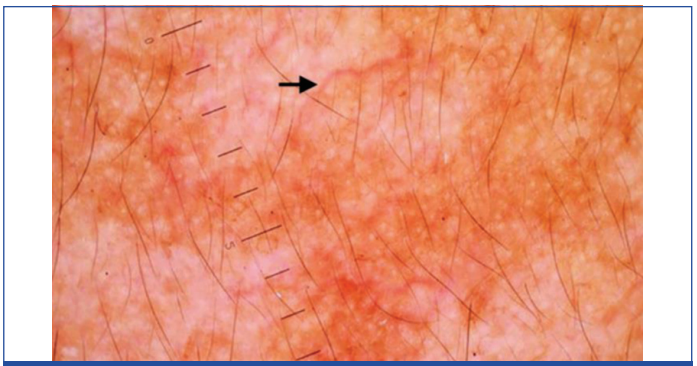
Among the cases, 115 (46.9%) had a MASI Score between 5-10. The average MASI Score was 8.7±7.71 [Table/Fig-14]. Among the cases (n=245) the maximum number of cases had a MASI Score between 1-10, 189 cases (77.1%) and among them (n=189) the most common skin type was IV, 97 cases/189 (51.3%) [Table/Fig-14,15].



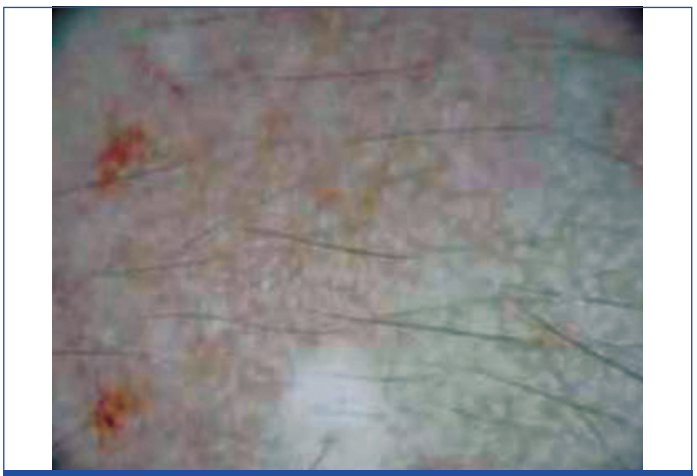
[Table/Fig-10]: Clinical pattern of melasma (mandibular).



[Table/Fig-11]: Epidermal pattern of dermoscopy of melasma showing fine brown reticular pattern superimposed on a background of faint light brown structureless areas.



[Table/Fig-12]: Dermal pattern of dermoscopy of melasma showing blue or bluish-grey colour with reticulo globular pattern with no areas of sparing.



[Table/Fig-13]: Mixed pattern of dermoscopy of melasma.

S. No.	MASI score	No. of cases	Average sun exposure (hrs/day)
1	1-5	74 (30.2%)	4.8
2	5.1-10	115 (46.9%)	5.3
3	10.1-15	36 (14.6%)	5.8
4	15.1-20	08 (3.2%)	5.4
5	20.1-25	06 (2.4%)	7.4
6	25.1-30	06 (2.4%)	3.2

[Table/Fig-14]: Showing distribution of MASI score among patients (n=245).

S. No.	MASI score	Skin Type III	Skin Type IV	Skin Type V
1	1-5	27	40	07
2	5.1-10	52	57	06
3	10.1-15	18	15	03
4	15.1-20	04	03	01
5	20.1-25	01	03	02
6	25.1 - 30	02	04	00

[Table/Fig-15]: Showing MASI score and Fitzpatrick skin type of the patients (n=245).

DISCUSSION

In the present study, the prevalence of melasma among males attending OPD during the study period was found to be 6.12% (1016 cases of melasma among 16576 male patients attending dermatology OPD). In contrast, a study by Sarkar R et al., found prevalence of melasma in men in India is 20.5% [6]. The low prevalence could be due to less number of patients attending the OPD and less cosmetic concern among males in this part of the state. South Asian countries have a relatively higher prevalence of melasma than in other countries, as seen in Nepal (6.8%) and China (13.61%) [12,13].

In the present study, the mean age involved was 34.53±7.92 with age group range being 20-57 years which is similar to the study conducted by Sarkar R et al., where the mean age involved was 33.5 years with age range being 19-53 years [6]. This age group was chosen because usually this age group is maximally affected cosmetically by the disease and risk factors for the disease like sun exposure and hormonal changes are present in this age group [6]. Majority of the index patients belonged to skin type III or skin type IV. Melasma being a disease of local change in pigmentation is more strongly associated with melanised phenotypes, mainly the intermediate skin types III-V (Fitzpatrick classification) and rarely the extreme skin types which show stable pigmentation [8].

Although, the exact aetiology behind the disease is yet to be discovered but, the major role is played by genetic susceptibility, sun exposure and hormones, cosmetics, photosensitising drugs, food items, thyroid diseases, hepatopathies, ovarian tumours, parasitic infestations and stressful events [14-17]. The principal risk factors identified till date are: sun exposure and family history [14]. In the present study, 228 cases (93%) had positive history of occupational sun exposure. This is in accordance with a study by Sarkar R et al., where 48.8% of the male patients reported sun exposure of which outdoor workers constituted 58.5% and 29.3% lived in high elevation regions of North India [18]. Mahmoud BH et al., through study proved that night time workers exposed to heat of ovens (e.g., bakers) also have high frequency of melasma [19]. Sun exposure is probably the most crucial yet controllable aggravating factor in the causation of melasma irrespective of gender of the patient [14]. Both the type of radiation exposure and the duration play key role in the pathogenesis. UV radiation (UVA and UVB) causes melanocyte proliferation and epidermal pigmentation more intensely in melasmic areas than in unaffected skin [20,21].

In the present study, positive family history i.e., presence of melasma in 1st degree relative was found in about (29.7%) 72 cases. A study by Keeling J et al., also confirmed positive family history in male patients with melasma [22]. When only male population was considered a study by Vazquez M et al., found a positive family history in as high as 70.4% of the patients [23] and a study in India also quantified positive family history among 39% of the male melasma patients [18].

In the present study, (27.3%) 67 patients had no history of application of topical medication before start of the disease followed by (24.4%) 60 patients who had applied some herbal product. A study including 76 patients with melasma concluded no association between the disease and the use of any chemical, suggesting that exogenous chemical exposures can't be considered as the foremost aetiological agent for the disease [24]. 11% (24 cases) showed association with type 2 DM and thyroid disorder (5 cases). There is no study showing prevalence of thyroid disorder in men with melasma or association of diabetes in patients with melasma There are studies by Pérez M et al., and Lutfi RJ et al., showing association of melasma with endocrinopathies and autoimmune thyroid diseases [25,26]. 124 cases (51%) presented within one year. A study by Sarkar R et al., on men found the average duration to be 1.4 years [18]. Most common pattern of melasma observed was malar type. Similar to the above result a study by Sarkar R et al., in men found the most common type of melasma as malar type (affecting 51 % of male patients) followed by centro-facial type [18].

The standard dermoscopic findings of melasma include a fine brown reticular pattern superimposed on a background of faint light brown structureless areas [27]. In addition to that, a vascular component can also be seen in majority of patients [28]. Melanin in the superficial epidermis presents as a dark brown, well-defined pigment network, with shades of light brown and irregularity within the network. Sparing of the appendageal openings is seen when melanin is located in the lower layers of the epidermis. A blue or bluish-grey colour with reticulo globular pattern is seen in dermal melasma when pigment is located in the dermis with no areas of sparing. Mixed type shows features of both types [27].

Limitation(s)

A bigger sample size could be selected for future studies to decrease the margin of error which was partially but not fully addressed in the present study due to the restricted time frame and lack of resources.

CONCLUSION(S)

Indian men of Fitzpatrick skin type IV of the age group 31-35 of the lower middle class with average sun exposure of 7.4 hours/day showed a higher prevalence of melasma. In patients of melasma there was higher average sun exposure. Higher MASI score was seen in higher skin types (IV/V) and greater sun exposure duration. Dermoscopy has evolved as a quick non invasive diagnostic tool to evaluate melasma and guide further management. This study is probably the first of its kind in this part of the state to connote these epidemiological features of melasma to the best of our knowledge.

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