

# Melasma: Presence of Pigmentation at Superciliary Location

Sarkar R, Gupta S\* and Garg VK

Department of Dermatology, Maulana Azad Medical College &amp; associated Lok Nayak Hospital, Delhi, India

## Abstract

**Background:** Melasma is a frequently encountered hypermelanoses that affects large number of men and women worldwide. Traditionally, three clinical patterns have been described: Malar, Centrofacial, and Mandibular. Involvement of superciliary region has not been described in any of the patterns; however, it is seen in a significant number of patients.

**Objective:** To observe for presence of pigmentation at superciliary regions in patients suffering from melasma.

**Methods:** Patients with previously untreated melasma attending dermatology out-patient department at our hospital were observed for superciliary pigmentation. Short history pertaining to pigmentation and duration was taken. Clinical patterns of melasma and depth of pigmentation (on wood's lamp) were noted. Precipitating factors were enquired for and noted if present.

**Results:** Total 82 melasma patients were analysed out of which 36 patients (43.90%) were found to have pigmentation at the superciliary region. Potential precipitating factors seen overall were: sun exposure – 18 (21.95%), pregnancy – 13 (15.86%) and oral contraceptive pills – 8 (9.76%). Among 21 patients who had either pregnancy or contraceptive pills as precipitating factors, 16 had superciliary pigmentation. This increased proportion of hormonal precipitating factors (pregnancy and oral contraceptive pills) seen in superciliary subset was statistically significant (44.44% in superciliary subset vs 25.6% overall,  $p=0.0423$ ).

**Conclusion:** Superciliary pigmentation is seen in a substantial proportion of melasma patients in our setup. Difference in incidence of hormonal precipitating factors (pregnancy, oral contraceptive pills) among patients with superciliary involvement points towards influence of hormonal factors on pigmentation at this site. Also, cultural factors like veil wearing habits of women in this region may influence superciliary pigmentation. Further studies are required to ascertain the significance and mechanisms of pigmentation at this site.

**Keywords:** Superciliary pigmentation; Melasma; Hyperpigmentation

## Introduction

Melasma is a common disorder of facial hyperpigmentation that affects people worldwide. The most common hyperpigmentary disorder affecting Indian population, it is frequently observed in women of Fitzpatrick skin types III to V and has a significant negative impact on patients' quality of life [1-3]. Traditionally considered a malady affecting only women, men have shown to constitute significant proportion (20.5%) of all melasma patients in Indian population [4]. Although the exact underlying etiology for melasma is unclear, well known risk factors include genetic predisposition, exposure to ultraviolet light, pregnancy, and exogenous hormones (i.e. oral contraceptives and hormone replacement therapy) [5]. Melasma has been classified based on a Wood's lamp examination to help identify the depth of the pigment [6]. Lesions that are enhanced when viewed under a Wood lamp imply increased epidermal melanin content, whereas those that are not enhanced with a Wood lamp examination imply an increase in dermal melanin content. Melasma has been described to occur in three facial patterns: Centrofacial, Malar and Mandibular [7]. The centrofacial pattern consists of lesions on the forehead, cheeks, nose, upper lip, or chin. The malar pattern describes lesions located primarily on the cheeks and nose. The mandibular pattern consists of lesions on the ramus of the mandible. Pigmentation at eyebrows and superciliary regions has not been classically described as a part of any of the pattern. We report presence of pigmentation at superciliary region in a considerable proportion of patients suffering from melasma. We intend to determine clinical and epidemiological profile of melasma patients having pigmentation at superciliary regions and to conjecture about the possible causes of pigmentation at this site.

## Aim

To observe presence of pigmentation at superciliary regions

in patients suffering from melasma and to ascertain their clinico-epidemiological profile.

## Materials and Methods

Patients of previously untreated melasma who attended the dermatology out-patient department at our hospital in the months of August, September and October were enrolled in the study and observed for superciliary pigmentation. Short history pertaining to pigmentation and duration was taken. Clinical patterns and depth of melasma were noted. Precipitating factors were enquired for and noted if present. Different parameters were compared within overall melasma group and superciliary subset. Descriptive and analytic statistics were done using IBM® SPSS® Statistics Version 22. Scale variables (age and duration of disease) were compared with T-tests. Rest of the parameters were compared with Chi-Square tests.

## Results

A total of 82 patients suffering from previously untreated melasma were enrolled into study and statistically analysed. The study group (Table 1) consisted of 13 (15.85%) men and 69 (84.15%) women. Duration of melasma varied from 2 to 72 months (Mean: 19.04, SD: 14.997). Most common pattern observed was centrofacial 43 (52.44%),

\*Corresponding author: Dr. Sumit Gupta, B N – 56 (East) Shalimar Bagh, Delhi – 110088, India, Tel: +919811341350; E-mail: [drsg87@gmail.com](mailto:drsg87@gmail.com)

Received: September 18, 2014; Accepted: October 06, 2014; Published: October 08, 2014

Citation: Sarkar R, Gupta S, Garg VK (2014) Melasma: Presence of Pigmentation at Superciliary Location. Pigmentary Disorders 1:140. doi:10.4172/JPD.1000140

Copyright: © 2014 Sarkar R, et al. The terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

<b>Number Of Patients (n)</b>	82
<b>Gender</b>	Males = 13 (15.85%); Females = 69 (84.15%)
<b>Age</b>	21 – 42 years; Mean = 29.74; SD = 4.82
<b>Duration</b>	2 – 72 months; Mean = 19.04; SD = 14.99
<b>Clinical Pattern</b>	Centrofacial = 43 (52.44%); Malar = 38 (46.34%); Mandibular = 1 (1.22%)
<b>Precipitating Factors</b>	Sun Exposure = 18 (21.95%); Pregnancy = 13 (15.85%); oOral Contraceptives = 8 (9.76%)
<b>Wood's Lamp</b>	Epidermal = 12 (14.63%); Mixed = 57 (69.51%); Inapparent = 15 (15.85%)

**Table 1:** Characteristics of Study Group.

followed by malar 38 (46.34%) and mandibular 1 (1.22%). 36 patients (43.9%) (Table 2) were found to have pigmentation at the eyebrow and superciliary region out of which 5 (13.89%) were men and 31 (86.11%) were women. Among patients with superciliary pigmentation, most common pattern seen was centrofacial – 24 (66.67%) followed by malar (33.33%) [4]. patients within the superciliary subset also exhibited pigmentation extending from the inferior border of the eyebrows to the upper eyelids. Majority (72.2%) of these patients were not aware about pigmentation at these sites. 21 (25.6%) patients of the total study group (Table 1) were found to have either pregnancy or hormonal therapy (OCP's) as precipitating factors whereas the same were seen in 16 (44.44%) of the patients having pigmentation at superciliary region (Table 2). This difference of hormonal precipitating factors (pregnancy and hormonal therapy/OCP's) between superciliary subset and the overall group of melasma patients was statistically significant ( $p = 0.0423$ , 2x2 Chi-Square Test). Rest of the parameters (Age, Duration, Sex Distribution, Clinical Patterns, Depth of Pigment and Other precipitating Factors) were not statistically different between entire group of melasma patients and the superciliary subset.

## Discussion

Melasma is an extremely common disorder of facial hypermelanoses of worldwide occurrence. In spite of extensive research, exact pathogenic mechanisms have not yet been elucidated. Multiple mechanisms like UV effects on melanocytes and on cytokine production, hormonal influences (LH, FSH, Estrogens, Progesterones,  $\beta$ -MSH, ACTH) and other factors like sebaceous gland density and activity, thyroid disorders, phototoxic medications, cosmetics and antioxidants have been suggested and investigated.

Melasma is seen in three typical distributions over face: centrofacial, malar and mandibular but many patients have a mixture of these patterns. Along with these pre-defined patterns, we report pigmentation at superciliary regions in a sizable proportion (43.9%) of melasma patients presenting at our out-patient department. Pigmentation at this site was found independent of the coexisting melasma pattern. It is unclear why pigmentation is seen at certain regions on face more commonly than other. Although no coherence between circulating levels of estrogen and progesterone to melasma has been found, many patients note the onset or worsening of disease with pregnancy or oral contraceptive use [8]. Melanocytes from healthy skin have been shown to express both nuclear and cytosol estrogen receptors [9]. Lieberman et al. conducted an immunohistochemical study and found that lesional melasma skin had increased estrogen receptor expression as compared to nearby normal skin [10]. In our study group also, significant (25.6%) patients were found to have either pregnancy or oral contraceptive pills as precipitating factors. This proportion was significantly higher in the subset having superciliary pigmentation (44.44%,  $p = 0.0423$ ). Therefore, it seems hormonal influences have a greater role to play in pigmentation at eyebrow and superciliary region and that this finding can probably be considered a cutaneous marker

for estrogenic hormonal milieu. However, further studies are required to confirm this assertion.

Moreover, at sites like eyebrows and superciliary region, melanocytes from outer root sheath of hair follicles may result in perifollicular pigmentation on sun exposure (Figure 1). As we cater to a large Muslim population, the veil worn by Muslim females in north India preferentially exposes the superciliary region to sun which may further increase pigmentation at this site. Although we did not find any significantly increased sun-exposure in the superciliary subset and did not collect data regarding veil-wearing habits of subjects, we do consider this to be potential factor resulting in pigmentation at this site.

<b>Number of Patients (n)</b>	36
<b>Gender</b>	Males = 5 (13.89%); Females = 31 (86.11%)
<b>Age</b>	21 – 41 years; Mean = 28.72; SD = 4.48
<b>Duration</b>	5 – 60 months; Mean = 17.47; SD = 12.85
<b>Clinical Pattern</b>	Centrofacial = 24 (66.67%); Malar = 12 (33.33%)
<b>Precipitating Factors</b>	Sun Exposure = 9 (25%); Pregnancy = 10 (27.78%); Oral Contraceptives = 6 (16.67%)
<b>Awareness of Superciliary Pigmentation</b>	10 (27.78%)
<b>Wood's Lamp</b>	Epidermal = 7(19.44%); Mixed = 23(63.89%); Inapparent = 6 (16.67%)

**Table 2:** Characteristics of Patients with Superciliary Pigmentation.



**Figure 1:** Peri-follicular pigmentation on sun exposure.

## Conclusion

Superciliary pigmentation is seen in a substantial proportion of melasma patients in our setup. Majority of these patients (72.22%) were unaware of pigmentation at this site. Centrofacial was the most common coexisting pigmentation pattern observed in these patients (68.9%). Difference in incidence of hormonal precipitating factors (pregnancy, oral contraceptive pills) among patients with superciliary involvement points towards influence of hormonal milieu on pigmentation at this site. Also, cultural factors like veil wearing habits of women in our region may influence superciliary pigmentation. Further studies are required to ascertain the significance, mechanisms and associations of pigmentation at this site.

## References

1. Pasricha JS, Khaitan BK, Dash S (2007) Pigmentary disorders in India. *Dermatol Clin* 25: 343-352, viii.
2. Dominguez AR, Balkrishnan R, Ellzey AR, Pandya AG (2006) Melasma in Latina patients: cross-cultural adaptation and validation of a quality-of-life questionnaire in Spanish language. *J Am Acad Dermatol* 55: 59-66.
3. Freitag FM, Cestari TF, Leopoldo LR, Paludo P, Boza JC (2008) Effect of melasma on quality of life in a sample of women living in southern Brazil. *J Eur Acad Dermatol Venereol* 22: 655-662.
4. Sarkar R, Puri P, Jain RK, Singh A, Desai A (2010) Melasma in men: a clinical, aetiological and histological study. *J Eur Acad Dermatol Venereol* 24: 768-772.
5. Grimes PE (1995) Melasma. Etiologic and therapeutic considerations. *Arch Dermatol* 131: 1453-1457.
6. Gilchrist BA, Fitzpatrick TB, Anderson RR, Parrish JA (1977) Localization of malanin pigmentation in the skin with Wood's lamp. *Br J Dermatol* 96: 245-248.
7. Katsambas A, Antoniou C (1995) Melasma. Classification and treatment. *J Eur Acad Dermatol Venereol* 4:217-223.
8. Pérez M, Sánchez JL, Aguiló F (1983) Endocrinologic profile of patients with idiopathic melasma. *J Invest Dermatol* 81: 543-545.
9. Jee SH, Lee SY, Chiu HC, Chang CC, Chen TJ (1994) Effects of estrogen and estrogen receptor in normal human melanocytes. *Biochem Biophys Res Commun* 199: 1407-1412.
10. Lieberman R, Moy L (2008) Estrogen receptor expression in melasma: results from facial skin of affected patients. *J Drugs Dermatol* 7: 463-465.