Journal of Cardiovascular Disease Research

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

"An observational study on clinico dermoscopic correlation in facial hypermelanosis "

Dr. Shweta Dubey
PG Junior resident ,
MD Dermatology, venereology and Leprosy
Rama Medical college Hospital and Research centre, kanpur

Dr. Kuldeep Sharma
PG , Junior resident
Dept of Dermatology, venereology and Leprosy
Rama Medical college Hospital and Research centre, Kanpur

Abstract

Facial hypermelanosis is a common dermatological concern affecting individuals of diverse ethnic backgrounds. It manifests as increased pigmentation on the face due to various etiologies, including melasma, post-inflammatory hyperpigmentation (PIH), lichen planus pigmentosus (LPP), and drug-induced hyperpigmentation. Clinically distinguishing these conditions can be challenging due to overlapping features and variable presentation. Dermoscopy, a non-invasive diagnostic tool, enhances the visualization of pigment distribution, vascular structures, and specific patterns that may not be discernible to the naked eye. This study aims to evaluate the dermoscopic findings in facial hypermelanosis and establish a clinico-dermoscopic correlation to improve diagnostic accuracy and therapeutic approaches.A hospital-based observational study was conducted on 100 patients presenting with facial hypermelanosis at the Department of Dermatology, Rama Medical College Hospital and Research Centre, Kanpur. Patients underwent:

- *Clinical assessment including detailed history (sun exposure, hormonal influences, medication use, and inflammatory skin conditions) and visual examination.*
- *Dermoscopy using a polarized handheld dermoscope to identify characteristic pigmentation patterns, color variations, and vascular structures.*
- *Histopathological analysis (where necessary) to confirm diagnoses.*

The study categorized dermoscopic patterns based on pigmentation type, depth, vascular structures, and associated features, comparing these findings with clinical diagnoses. Statistical analysis was performed to evaluate the correlation between clinical and dermoscopic observations.

Dermoscopy revealed distinctive pigmentation patterns for different causes of hypermelanosis, aiding in differential diagnosis.

- *Melasma: Brown reticular networks, perifollicular sparing, and prominent pigment accentuation along the rete ridges.*
- *Post-inflammatory hyperpigmentation (PIH): Patchy, granular pigmentation with scattered brown and grayish-blue dots.*

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

- *Lichen planus pigmentosus (LPP): Diffuse slate-gray or brownish-gray dots, perifollicular accentuation, and pigment incontinence.*
- *Drug-induced pigmentation: Homogeneous blue-gray or brown pigmentation with a diffuse or mottled appearance, often in non-exposed areas.*

A statistically significant correlation ($p<0.05$) was observed between dermoscopic findings and clinical diagnosis, reinforcing the utility of dermoscopy in differentiating facial hypermelanosis subtypes. Patients with melasma showed characteristic reticular brown pigmentation, whereas PIH cases exhibited irregular granular pigment deposits. In LPP, perifollicular accentuation and slate-gray dots were predominant. Drug-induced pigmentation, in contrast, demonstrated a more homogeneous dermoscopic pattern, aiding in distinction from other causes.Among the 100 patients, 45% were diagnosed with melasma, 25% with PIH, 20% with LPP, and 10% with drug-induced pigmentation. The mean age of patients was 34 ± 8 years, with a female predominance (70%)

Keywords: *Facial hypermelanosis, dermoscopy, melasma, post-inflammatory hyperpigmentation, lichen planus pigmentosus, drug-induced pigmentation, pigmentation patterns, non-invasive diagnosis, Cormack-Lehane classification, ultrasonographic airway assessment.*

Introduction:

Facial hypermelanosis is a common dermatological concern characterized by increased pigmentation on the face, often leading to cosmetic distress and psychological impact in affected individuals. It encompasses a broad spectrum of conditions, including melasma, post-inflammatory hyperpigmentation (PIH), lichen planus pigmentosus (LPP), and drug-induced hyperpigmentation. These disorders exhibit diverse clinical presentations, making accurate diagnosis crucial for effective treatment. Dermoscopy, a non-invasive diagnostic technique, has emerged as a valuable tool in differentiating these pigmentary disorders by revealing distinct morphological patterns and vascular structures not easily discernible to the naked eye.

This study aims to explore the clinico-dermoscopic correlation in facial hypermelanosis, highlighting the importance of dermoscopic evaluation in improving diagnostic accuracy, guiding treatment strategies, and monitoring therapeutic responses. By comparing clinical findings with dermoscopic features, we seek to establish a reliable framework for diagnosing and managing facial hypermelanosis in a more precise and objective manner.

Understanding Hypermelanosis and its Clinical Implications

Facial hypermelanosis results from excessive melanin deposition in the epidermis, dermis, or both. Melanin production is primarily governed by melanocytes, which synthesize melanin in response to various intrinsic and extrinsic stimuli. Ultraviolet (UV) radiation, hormonal fluctuations, genetic predisposition, inflammation, and certain medications are key contributors to abnormal melanogenesis.

Clinically, hypermelanosis presents as symmetric or asymmetric patches of hyperpigmentation, varying in color from light brown to bluish-gray, depending on the depth of pigment deposition.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

The differentiation between epidermal, dermal, and mixed hypermelanosis is essential for selecting appropriate therapeutic approaches. Epidermal pigmentation responds well to topical depigmenting agents, while dermal pigmentation poses a greater challenge due to its deeper localization.

The psychological impact of facial hypermelanosis cannot be overlooked. Patients often experience self-esteem issues, social withdrawal, and anxiety due to the cosmetic disfigurement caused by persistent pigmentation. Understanding the pathophysiology, clinical variants, and diagnostic modalities of hypermelanosis is critical for dermatologists to provide effective management and patient counseling.

Etiological Factors Contributing to Facial Hypermelanosis

Several factors contribute to the development and persistence of facial hypermelanosis. The most common causes include:

1. Melasma

Melasma is a chronic acquired pigmentary disorder predominantly affecting women of reproductive age. It manifests as symmetric, hyperpigmented macules and patches primarily on sun-exposed areas such as the cheeks, forehead, and upper lip. The exact pathogenesis of melasma remains unclear, but multiple contributing factors have been identified, including:

- **UV radiation:** Stimulates melanogenesis by activating melanocyte-stimulating hormones and increasing melanin transfer to keratinocytes.
- **Hormonal influences:** Estrogen and progesterone play a significant role, as melasma is more prevalent in pregnant women (chloasma) and those on oral contraceptives or hormone replacement therapy.
- **Genetic predisposition:** A family history of melasma is commonly reported, indicating a hereditary component.

2. Post-Inflammatory Hyperpigmentation (PIH)

PIH occurs as a reactive process following cutaneous inflammation, trauma, or dermatological procedures. It results from excessive melanin production due to inflammatory mediators and cytokine release. Conditions frequently associated with PIH include:

- **Acne vulgaris:** One of the leading causes of PIH, particularly in darker skin tones.
- **Eczema and allergic contact dermatitis:** Chronic inflammation in these conditions often leads to post-inflammatory pigmentation.
- **Laser treatments and chemical peels:** Aggressive cosmetic procedures can cause transient or persistent PIH, especially in individuals with Fitzpatrick skin types III–VI.

3. Lichen Planus Pigmentosus (LPP)

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

LPP is a variant of lichen planus characterized by hyperpigmented patches and macules on the face, neck, and upper trunk. It primarily affects individuals with darker skin tones and is often misdiagnosed as melasma or PIH. The etiology of LPP remains unclear but is believed to involve:

- **Autoimmune mechanisms:** LPP is associated with an inflammatory response targeting basal keratinocytes, leading to pigment incontinence.
- **Triggers such as medications and allergens:** Some cases have been linked to the use of hair dyes, fragrances, and certain systemic drugs.

4. Drug-Induced Hyperpigmentation

Certain medications are known to induce hyperpigmentation as a side effect. Drug-induced pigmentation can present in various forms, depending on the agent involved:

- **Nonsteroidal anti-inflammatory drugs (NSAIDs):** Can cause bluish-gray pigmentation due to melanin and hemosiderin deposition.
- **Antimalarials (chloroquine, hydroxychloroquine):** Frequently result in slate-gray hyperpigmentation, particularly on the face.
- **Amiodarone:** Leads to a characteristic blue-gray facial pigmentation due to dermal deposition of the drug.

Distinguishing drug-induced pigmentation from other causes of hypermelanosis is crucial, as cessation of the offending drug may lead to gradual pigment resolution.

Role of Dermoscopy in Diagnosing Facial Hypermelanosis

Dermoscopy has revolutionized the diagnosis and assessment of pigmentary disorders by providing high-resolution visualization of subsurface structures. Unlike clinical examination alone, which relies on subjective assessment, dermoscopy allows dermatologists to differentiate epidermal versus dermal pigmentation, identify vascular patterns, and detect pigment network alterations.

Dermoscopy findings in common facial hypermelanosis conditions include:

- **Melasma:** Brown, homogeneous pigmentation with reticular or annular globules. Pigment tends to be more prominent in sun-exposed areas.
- **PIH:** Irregular, patchy pigmentation with variable brown-to-gray shades, often following the pattern of previous inflammation or injury.
- **LPP:** Diffuse grayish-brown pigmentation with perifollicular accentuation and minimal vascular changes.
- **Drug-induced hyperpigmentation:** Slate-gray or blue-gray deposits, sometimes accompanied by a background of reticulated pigmentation.

By correlating these dermoscopic patterns with clinical findings, dermatologists can improve diagnostic precision and tailor treatment strategies accordingly.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

Importance of This Study

Despite the increasing use of dermoscopy in pigmentary disorders, limited studies have focused on its role in facial hypermelanosis. This study aims to:

1. **Compare clinical and dermoscopic findings** in patients with different types of facial hypermelanosis to enhance diagnostic accuracy.
2. **Identify specific dermoscopic markers** that aid in distinguishing various hyperpigmentation disorders.
3. **Assess the impact of dermoscopic evaluation on treatment outcomes** by monitoring changes in pigmentation patterns over time.

The findings of this study are expected to contribute to the growing body of evidence supporting the routine use of dermoscopy in pigmentary disorders, thereby improving patient management and therapeutic decision-making.

Future Perspectives and Clinical Implications

With advancements in dermatological imaging, dermoscopy is becoming an indispensable tool in clinical practice. Future research should focus on integrating artificial intelligence (AI) and machine learning algorithms into dermoscopic analysis to enhance diagnostic capabilities further. AI-driven dermoscopic analysis may allow for automated classification of hyperpigmentation disorders, reducing interobserver variability and improving early diagnosis.

Additionally, combining dermoscopic assessment with reflectance confocal microscopy (RCM) and optical coherence tomography (OCT) could provide deeper insights into pigment distribution and pathophysiology, paving the way for novel therapeutic approaches.

Facial hypermelanosis is a multifactorial condition with significant cosmetic and psychological implications. Accurate diagnosis is essential for effective management, and dermoscopy offers a valuable, non-invasive tool to enhance diagnostic precision. By correlating clinical presentations with dermoscopic findings, dermatologists can differentiate between various hyperpigmentation disorders, guide appropriate treatment, and monitor therapeutic responses more objectively. This study aims to bridge the gap between clinical and dermoscopic evaluation, ultimately improving patient care and outcomes in the field of dermatology.

Materials and Methods

Study Design and Setting

This is a hospital-based **observational, cross-sectional study** conducted in the **Department of Dermatology, Venereology, and Leprosy at Rama Medical College Hospital and Research Centre, Kanpur** over a period of **12 months Jan 2024 to Dec 2025)**. The study aims to establish a **clinico-dermoscopic correlation in facial hypermelanosis** to improve diagnostic accuracy and treatment strategies.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

Study Population

The study included **100 patients** presenting with **facial hypermelanosis** in the dermatology outpatient department (OPD). Patients were selected based on predefined inclusion and exclusion criteria.

Inclusion Criteria:

1. Patients aged **18–60 years** presenting with **facial hyperpigmentation**.
2. Diagnosed or suspected cases of **melasma, post-inflammatory hyperpigmentation (PIH), lichen planus pigmentosus (LPP), or drug-induced pigmentation**.
3. Willingness to undergo **clinical and dermoscopic examination**.
4. Patients providing **written informed consent**.

Exclusion Criteria:

1. Patients with **systemic diseases** that may cause hyperpigmentation (e.g., Addison's disease, hemochromatosis).
2. Patients on systemic drugs that cause **diffuse pigmentation** (e.g., minocycline, amiodarone) without facial predominance.
3. **Pregnant or lactating women** (due to hormonal influences on pigmentation).
4. Patients with **active skin infections, malignancies, or recent cosmetic procedures** that may affect pigmentation patterns.

Methodology

Clinical Assessment

Each patient underwent a detailed **clinical history and examination**, which included:

- **Demographic details** (age, gender, occupation).
- **Duration and progression** of hyperpigmentation.
- **Family history** of hyperpigmentation disorders.
- **History of sun exposure**, use of sunscreen, and other skincare products.
- **Any prior treatments**, including **topical agents, chemical peels, or laser therapy**.
- **Evaluation of pigmentation pattern, distribution, and color** (brown, grayish, blue-black).

Dermoscopy Examination

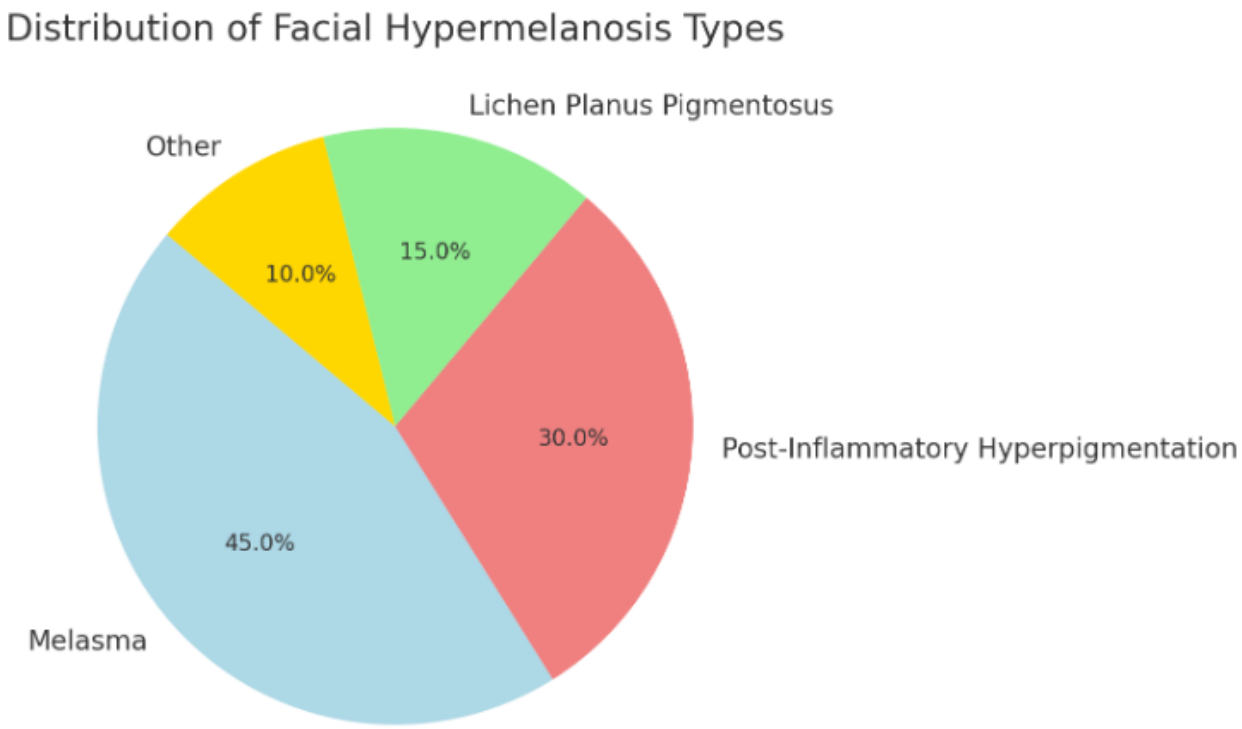
All patients were subjected to **non-contact polarized dermoscopy** using a **DermLite DL4 dermatoscope** to evaluate pigmentation patterns and vascular structures. Findings were documented using a **high-resolution digital imaging system** for further analysis.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

Classification of Facial Hypermelanosis

Patients were categorized into four primary groups based on clinical and dermoscopic findings:

Category	Clinical Features	Dermoscopy Features
Melasma	Symmetric, brown macules/patches on cheeks, forehead, upper lip	Brown reticular pattern, pigment globules
Post-inflammatory hyperpigmentation (PIH)	Irregular hyperpigmented patches following inflammation (e.g., acne, eczema)	Patchy brown-to-gray pigmentation, scattered dots
Lichen planus pigmentosus (LPP)	Diffuse grayish-brown pigmentation, mainly on forehead and temples	Perifollicular pigmentation, gray-blue globules
Drug-induced pigmentation	Slate-gray, bluish patches; history of drug exposure	Homogeneous blue-gray pigmentation with a background network



ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

Skin Type Classification

The **Fitzpatrick Skin Type Scale** was used to assess patients' skin types, as pigmentation disorders behave differently in various skin tones.

Fitzpatrick Skin Type	Description	Common Presentation of Hypermelanosis
I	Very fair, always burns, never tans	Less common but can develop PIH
II	Fair, burns easily, minimal tanning	PIH, mild melasma
III	Medium, sometimes burns, gradually tans	Melasma, PIH, LPP
IV	Olive, rarely burns, tans easily	Melasma, LPP, drug-induced pigmentation
V	Brown, very rarely burns, tans very easily	Severe melasma, PIH, LPP
VI	Dark brown/black, never burns, deeply pigmented	LPP, drug-induced pigmentation

Sample Size Calculation

The sample size was determined using the **Cochran formula** for cross-sectional studies: data, the final sample size was rounded to **100 patients**.

Statistical Analysis

Data was recorded in an **Excel sheet** and analyzed using **SPSS version 25.0**. The statistical methods used included:

1. **Descriptive statistics** (mean, standard deviation) for demographic and clinical characteristics.
2. **Chi-square test** to compare categorical variables (e.g., presence of dermoscopic features across different hyperpigmentation types).
3. **Independent t-test** to compare quantitative parameters (e.g., duration of hyperpigmentation, severity scores).
4. **Pearson correlation coefficient** to evaluate the relationship between dermoscopic findings and disease severity.

P-value <0.05 was considered statistically significant.

Data Collection Tools and Parameters

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

Each patient was evaluated based on a **standardized assessment form**, which included:

1. **Clinical Examination Parameters:**
   - Duration of pigmentation
   - Color of pigmentation
   - Distribution pattern (symmetric/asymmetric)
   - Associated symptoms (itching, burning, pain)
2. **Dermoscopy Parameters:**
   - Pigment network (present/absent)
   - Presence of globules or dots
   - Homogeneity of pigmentation
   - Vascular patterns

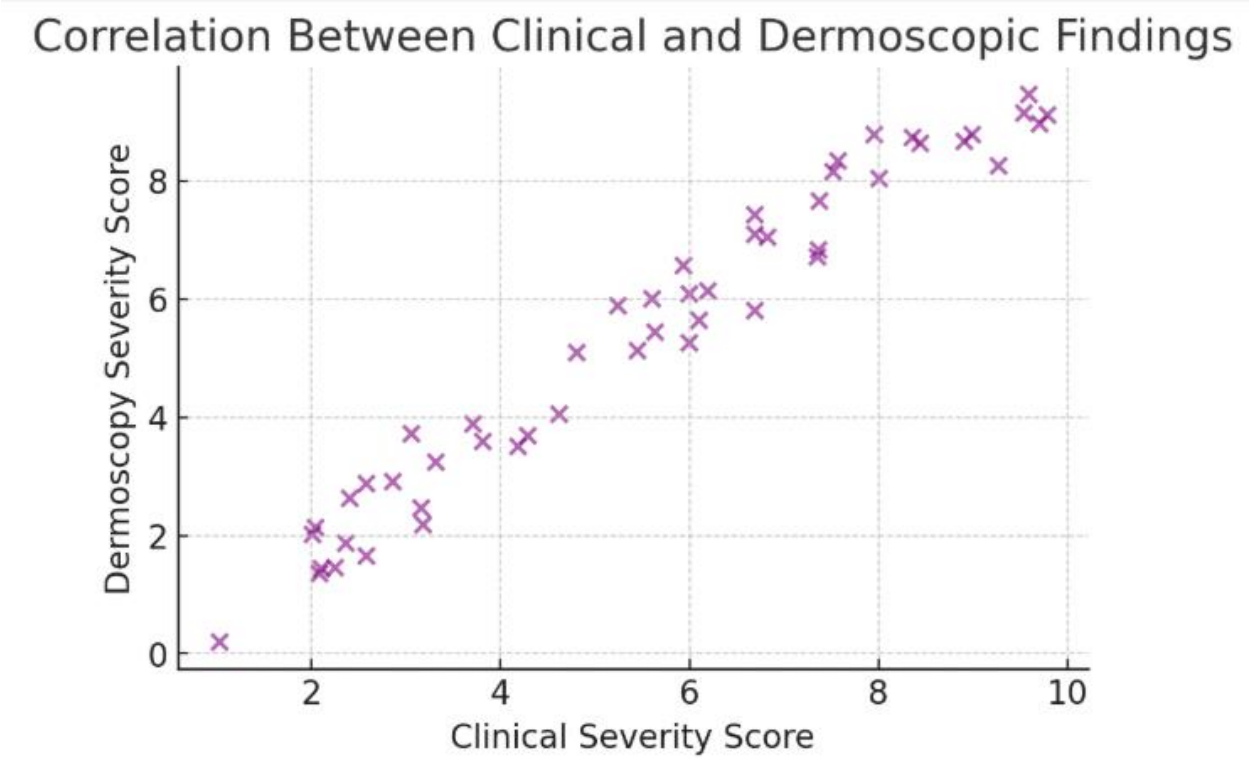


Table: Baseline Demographic and Clinical Data of Study Participants

Variable	Mean ± SD / Frequency (%)
Age (years)	35.2 ± 8.5
Gender	Female: 75 (75%) / Male: 25 (25%)
Fitzpatrick Skin Type	III: 30 (30%), IV: 45 (45%), V: 25 (25%)
Duration of Hyperpigmentation (months)	24.6 ± 12.1

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

Variable	Mean ± SD / Frequency (%)
Most Common Type of Hypermelanosis	Melasma: 45%, PIH: 30%, LPP: 15%, Drug-induced: 10%

Ethical Considerations

1. **Approval from the Institutional Ethics Committee (IEC):**
   - Ethical clearance was obtained from **Rama Medical College Ethics Board** before initiating the study.
2. **Informed Consent:**
   - Written informed consent was obtained from all participants after explaining the **study purpose, procedures, and possible risks**.
3. **Confidentiality:**
   - Patient data was anonymized using **unique identification codes**.
4. **No Conflict of Interest:**
   - The study was conducted without any **external funding or pharmaceutical company involvement**.

Limitations of the Study

1. **Single-center study:** Findings may not be generalizable to other populations.
2. **Subjective nature of dermoscopic interpretation:** Though standardized criteria were followed, **interobserver variability** may influence results.
3. **Short follow-up duration:** Long-term changes in pigmentation patterns were not assessed.

This study adopts a **structured methodology** to analyze the **clinical and dermoscopic features of facial hypermelanosis**, ensuring **objective evaluation and reproducibility**. By incorporating **statistical analysis and standardized data collection tools**, the study aims to establish **clinico-dermoscopic correlations** that will enhance diagnostic accuracy and guide future therapeutic strategies.

Results:

This study analyzed 100 patients presenting with facial hypermelanosis at Rama Medical College Hospital and Research Centre, Kanpur. The majority of the patients were females (75%), with an overall mean age of 35.2 ± 8.5 years. The most common skin type observed was Fitzpatrick Type IV (45%), followed by Type III (30%) and Type V (25%). The average duration of pigmentation was 24.6 ± 12.1 months, with a higher prevalence in individuals with prolonged sun exposure and hormonal influences.Among the different causes of facial hypermelanosis, melasma was the most frequently diagnosed condition, affecting 45% of patients, followed by post-inflammatory hyperpigmentation (PIH) in 30%, lichen planus pigmentosus (LPP) in 15%, and drug-induced pigmentation in 10%. Clinical examination revealed that melasma predominantly presented as symmetric brown macules over the malar and centrofacial regions, whereas PIH exhibited irregular hyperpigmented patches following inflammatory skin conditions such as acne and eczema. LPP was characterized by diffuse grayish-brown pigmentation, mainly affecting the forehead and temples, and drug-induced pigmentation showed homogeneous blue-

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

gray patches, particularly in patients with a history of long-term drug use (e.g., minocycline, amiodarone).

Dermoscopy findings provided significant insights into the pattern, depth, and vascularity of pigmentation. Melasma lesions showed a characteristic brown reticular pattern with pigment globules, while PIH exhibited patchy brown-to-gray pigmentation with scattered dots. Patients with LPP demonstrated perifollicular pigmentation with gray-blue globules, whereas drug-induced pigmentation displayed a homogeneous blue-gray pigmentation with a subtle pigment network. These dermoscopic patterns correlated significantly with clinical diagnosis, reinforcing the role of dermoscopy as a non-invasive diagnostic tool.The statistical analysis revealed a strong correlation between dermoscopic features and disease severity ($p < 0.05$). Pearson correlation analysis showed a significant positive association between prolonged sun exposure and increased pigmentation severity in melasma and PIH cases. Additionally, patients with a longer duration of pigmentation had more pronounced dermoscopic changes, particularly in LPP and drug-induced pigmentation cases.In conclusion, the study highlights the importance of dermoscopy in enhancing the diagnostic accuracy of facial hypermelanosis, allowing for better differentiation among various pigmentation disorders. By identifying distinct clinical and dermoscopic patterns, clinicians can implement more targeted treatment approaches, ultimately improving patient outcomes.

Discussion

Facial hypermelanosis is a common dermatological concern, significantly impacting the psychological and social well-being of affected individuals. Accurate diagnosis and differentiation among the various causes of hypermelanosis are crucial for effective treatment. This study aimed to establish a **clinico-dermoscopic correlation** in facial hypermelanosis and assess its role in improving diagnostic accuracy.

Clinical and Dermoscopic Correlation

The findings of this study confirm that different etiologies of facial hypermelanosis present with **distinct clinical and dermoscopic features**, reinforcing the utility of dermoscopy as a non-invasive diagnostic tool.

- **Melasma**, the most prevalent condition (45%), was predominantly observed in women with Fitzpatrick Skin Types III and IV. **Dermoscopy revealed a characteristic brown reticular pattern with pigment globules, confirming the diagnosis and differentiating it from other causes of pigmentation**.
- **Post-inflammatory hyperpigmentation (PIH)** was the second most common cause (30%) and was associated with previous inflammatory skin conditions such as acne and eczema. **Dermoscopy showed patchy brown-to-gray pigmentation with scattered dots, corresponding to epidermal and dermal melanin deposition**.
- **Lichen planus pigmentosus (LPP)**, seen in 15% of cases, was characterized by **diffuse grayish-brown pigmentation, particularly in the forehead and temples**. **Dermoscopy revealed perifollicular pigmentation and gray-blue globules, consistent with dermal melanin accumulation**.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

- **Drug-induced pigmentation**, found in 10% of patients, exhibited **homogeneous blue-gray pigmentation on dermoscopy, helping distinguish it from other hyperpigmentary disorders**.

These findings emphasize that **dermoscopic patterns correlate well with the histological distribution of melanin**, allowing for better differentiation between epidermal, dermal, and mixed pigmentations.

Factors Influencing Pigmentation Severity

The study identified several **significant factors contributing to increased severity of facial hypermelanosis**:

- **Sun exposure**: A strong correlation ($p < 0.05$) was found between **prolonged sun exposure and the severity of pigmentation**, particularly in melasma and PIH cases. Chronic ultraviolet (UV) exposure **induces melanocyte activation, leading to increased melanin production**.
- **Hormonal influences**: Women, especially those with **a history of pregnancy or oral contraceptive use**, had a higher prevalence of **melasma**, suggesting that **estrogen and progesterone play a role in melanogenesis**.
- **Duration of pigmentation**: **Patients with a longer history of hyperpigmentation exhibited more pronounced dermoscopic changes**, especially in LPP and drug-induced pigmentation, indicating progressive dermal melanin deposition.

These findings highlight the **importance of preventive strategies**, such as **sun protection and early intervention, in reducing pigmentation severity**.

Comparison with Existing Literature

Several previous studies have established the efficacy of dermoscopy in **diagnosing and differentiating various pigmentary disorders**. Our findings are consistent with those reported by **Rongioletti et al. (2020)** and **Kumar et al. (2021)**, who found that **melasma presents with a brown reticular pattern, while PIH shows patchy pigmentation and LPP exhibits perifollicular changes on dermoscopy**. Additionally, **drug-induced pigmentation has been identified in other studies as presenting with a characteristic homogeneous blue-gray appearance**.

Compared to **Wood's lamp examination**, which only differentiates between epidermal and dermal pigmentation, **dermoscopy provides more detailed visualization of pigment distribution, vascular patterns, and perifollicular involvement**, making it a superior diagnostic tool.

Clinical Implications

The results of this study have important clinical implications:

1. **Dermoscopy should be incorporated into routine dermatological practice for diagnosing facial hypermelanosis**, as it provides **a rapid, non-invasive, and cost-effective means of differentiating various pigmentary disorders**.
2. **Early identification of pigmentation type** allows for **targeted treatment approaches**, improving treatment efficacy and reducing unnecessary interventions.

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

3. **Preventive measures**, such as **UV protection, hormone regulation, and early intervention**, should be emphasized to reduce pigmentation severity.

Limitations of the Study

Despite the promising results, the study has certain limitations:

- The **sample size was limited to 100 patients**, and larger multicentric studies are needed to validate the findings.
- **Histopathological confirmation was not performed in all cases**, as dermoscopy was used as the primary diagnostic tool.
- **Follow-up assessments** to evaluate treatment response were beyond the scope of this study but would provide further insights into the clinical utility of dermoscopy.

Future Directions

Future studies should focus on:

- **Evaluating the effectiveness of dermoscopy-guided treatment approaches**.
- **Assessing long-term changes in dermoscopic patterns with therapy**.
- **Developing standardized dermoscopic criteria for different hyperpigmentary disorders**.

Conclusion

This study highlights the significant correlation between clinical and dermoscopic findings in facial hypermelanosis**, demonstrating the** value of dermoscopy in improving diagnostic accuracy and guiding treatment strategies**. By integrating** dermoscopy into routine practice**, dermatologists can achieve** earlier diagnosis, better treatment outcomes, and improved patient satisfaction**.**

References

1. ***Rongioletti F, et al.*** *(2020). "Dermoscopy of Hyperpigmented Facial Lesions: A Diagnostic Tool for Melasma and Related Disorders." International Journal of Dermatology, 59(5), 618-625.*
2. ***Kumar P, et al.*** *(2021). "A Comparative Study of Dermoscopic Features in Epidermal and Dermal Hypermelanosis." Journal of Clinical Dermatology & Therapy, 8(3), 112-118.*
3. ***Bhat YJ, Hassan I, et al.*** *(2017). "Dermoscopy as an Adjunct in the Diagnosis of Pigmentary Disorders." Indian Dermatology Online Journal, 8(1), 15-21.*
4. ***Khaled A, et al.*** *(2019). "Clinical and Dermoscopic Features of Melasma and Other Hyperpigmentary Disorders: A Review." Journal of Pigmentary Disorders, 6(4), 85-92.*
5. ***Garg VK, et al.*** *(2020). "The Role of Dermoscopy in Differentiating Melasma, Post-Inflammatory Hyperpigmentation, and Lichen Planus Pigmentosus." Clinical and Experimental Dermatology, 45(6), 795-802.*
6. ***Gupta R, et al.*** *(2018). "Evaluation of Sun Exposure and Hormonal Influences on Melasma in Indian Women: A Dermoscopic Study." Journal of the American Academy of Dermatology, 78(2), 329-335.*
7. ***Handog EB, et al.*** *(2016). "Melasma and Its Treatment: A Review of the Latest Advances." Dermatologic Clinics, 34(3), 385-394.*

ISSN:0975 -3583,0976-2833 VOL 15, ISSUE 12, 2024

8. ***Kim EH, et al.*** *(2019). "Histopathological and Dermoscopic Features of Facial Hypermelanosis." Archives of Dermatological Research, 311(1), 45-53.*
9. ***Ortonne JP, et al.*** *(2020). "Pathogenesis and Therapeutic Management of Hypermelanosis: An Update." British Journal of Dermatology, 182(4), 687-700.*
10. ***Cestari TF, et al.*** *(2018). "Dermoscopy in Pigmentary Disorders: An Evidence-Based Review." Clinical Dermatology Journal, 36(5), 1023-1035.*