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Concordance of Dermoscopic Findings and Wood's Lamp Findings in Melasma Patients

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ABSTRACT

Objective: To find the concordance of Dermoscopic and Wood's lamp findings in melasma patients.
Study Design: Cross-sectional study.
Place and Duration of Study: Combined Military Hospital, Kharian Pakistan, from Nov 2020 to Sep 2021.
Methodology: A total of sixty patients clinically classified as melasma were enrolled in the study. Clinical assessment was done, and patients were examined with Wood's lamp and Dermoscope, and findings were recorded.
Results: The results of concordance of Wood's lamp findings and Dermoscopic findings were significant as analysed by Kappa Statistics where value of k was 0.597 and *p*-value was <0.001.
Conclusion: Dermoscopy is a newer and more advanced tool. It should be used as a screening and diagnostic tool for melasma and other pigmentation disorders in our Outpatient Departments for earlier subtyping of melasma, deciding the treatment choice and predicting prognosis.

Keywords: Concordance, Dermoscope, Melasma, Wood's lamp.

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INTRODUCTION

Melasma or cholasma or mask of pregnancy is a common acquired facial hypermelanosis. It commonly involves the photo-exposed areas of the face, mainly involving the upper lip, the malar regions, the forehead and the chin. Rarely, the neck and forearm may be affected.[1,2] Depending on the depth of pigmentation, melasma can be classified into epidermal, dermal and mixed types. Clinically, Epidermal melasma has sharp borders, while the other two types have a blotchy appearance.[3] Epidermal type of melasma is more commonly observed in younger individuals, while the mixed type is more common in the middle age group.[4,5]

A Wood's lamp is useful for knowing the depth of melanin. Epidermal pigmentation is enhanced under Wood's lamp, but dermal pigmentation shows any enhancement.[6] Mixed melasma gives mixed results, with enhancement in certain areas and no enhancement in others.[7] Dermoscopy is a non-invasive, in vivo technique primarily used to examine skin lesions. It allows the visualisation of subsurface skin structures that are usually not visible to the naked eye.[8,9] Dermoscopy may also be used to know the depth of pigmentation in patients with melasma. With a dermoscopy, one can visualise pigment distribution and the colour variation of melanin depending on its location within the skin.[10] We conducted a cross-sectional study to find concordance between Wood's lamp and Dermoscopic findings in our melasma patients attending the Dermatology Outpatient Department of Combined Military Hospital Kharian Pakistan.

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METHODOLOGY

The cross-sectional study was conducted at the Dermatology Outpatient Department of Combined Military Hospital Kharian Pakistan from November 2020 to September 2021, after approval from the Ethical Committee (1100/Adm dated 09-09-2021). The sample size was calculated with the help of the WHO calculator, where the population proportion value was *p*=0.90.[11]

Inclusion Criteria: Patients of either gender, aged 18 to 60 years with any skin type and attending the Dermatology Outpatient Department were included.

Exclusion Criteria: Patients, who had undergone topical and systemic antifungal treatment for last 1-6 months, were excluded.

Informed consent was obtained from all patients for the study. Patients were also asked regarding pregnancy (initiation of melasma or worsening during a previous pregnancy), use of oral contraceptive pills, daily sun exposure and use of night creams for

fairness. Colour and sites of involvement were also assessed. Pictures were taken, and each patient was examined with both Wood's lamp and Dermoscope. Melasma was classified into Epidermal, Dermal and Mixed types, with Wood's lamp and Dermoscope separately. If pigmentation was accentuated under Wood's lamp fluorescence, it was called Epidermal Melasma (Figure-1 a,b). If no accentuation of pigmentation was noted on Wood's lamp, it was labelled as Dermal Melasma (Figure-2 a,b). Melasma was labelled as mixed when the mixed picture of pigment accentuation was seen under Wood's lamp (Figure-3 a,b). On the dermoscopy, epidermal melasma was labelled when on examination of regular pigment network with brown homogenous pigmentation with sparing skin appendages like hair follicle and ostia of eccrine sweat glands, which gives exaggerated pseudo network pattern with concave borders termed as "Jelly sign"10 (Figure-1c). Dermal melasma was labelled by the dermoscopy when greyish brown or greyish black pigmentation with irregular pigment network (Figure-2c), and Mixed melasma was labelled when there was mixed or diffuse reticular pigmentation of brownish or greyish black seen on the dermoscopy (Figure-3c).

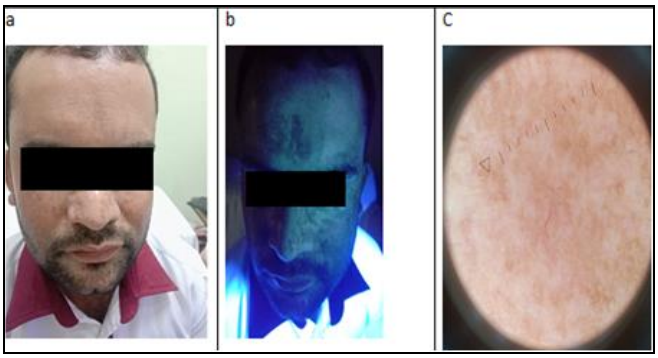

Figure-1: Epidermal Melasma on Wood's lamp (b) and Dermoscope(c)

(a)Patient with epidermal melisma, (b) Epidermal melasma on Wood's Lamp, (c)Epidermal melasma On dermoscope

Ideal Derm Wood lamps were used in the study. HEINE DELTA 30 Dermoscope was used in this study, and patients were examined in polarised light with Dermoscope. Images of patients were taken after informed consent with Wood's lamp and Dermoscope. Statistical Package for Social Sciences (SPSS) version 24.0 was used for the data analysis. Qualitative variables were expressed as frequency and percentages. The Chi-square value was determined, and the relation between Wood's lamp finding and dermoscopic findings was calculated using kappa statistics.

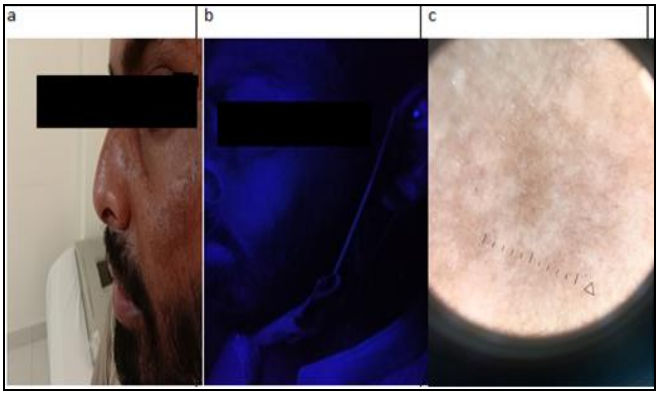

Figure-2: Dermal Melasma on Wood's lamp (b) and Dermoscope (c)

(a)Patient with dermal melisma (b) Dermal melasma on Wood's Lamp (c) Dermal melasma On dermoscope

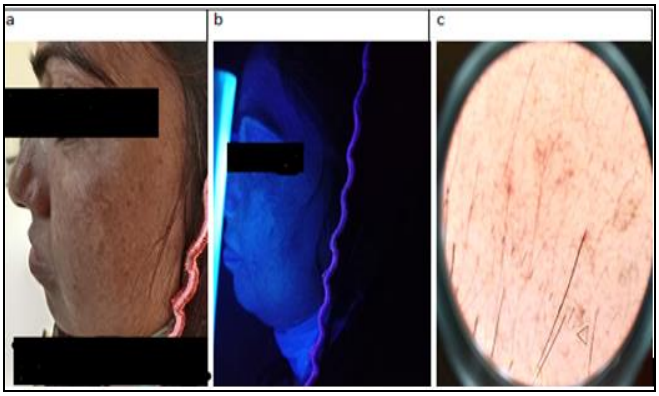

Figure-3: Mixed Melasma on Wood's lamp (b) and Dermoscope (c)

(a)Patient with mixed melisma (b) Mixed melasma on Wood's Lamp (c) Mixed melasma On dermoscope

RESULTS

A total of sixty melasma patients were enrolled in the study. Of 60 patients, only 5(8.33%) were male, while the remaining 55(91.66%) were females. Melasma classification based on areas of involvement and colour pigmentation is shown in Table-I. 24(43.63%) out of 55 females gave a history of new onset of melasma or exacerbation of melasma pigmentation during a previous pregnancy.

Table- I:Melasma Classification on the basis of Clinical Assessment (n=60)

Areas of Involvement	Colour of Pigmentation
Centrofacial (37, 61.66%)	Dark Brown (32,53.33%)
Malar (18,30%)	Grayish black (18,30%)
Mandibular (5,8.33%)	Mixed (10,16.66%)

On Wood's lamp examination, 36(60%) patients were found to have epidermal melasma, 14(23.33%) had dermal melasma, while mixed type melasma was detected in 10(16.66%) patients.

On dermoscopy, 36(60%) of our patients showed a regular pigment network with brown homogenous pigmentation termed epidermal. In comparison, 16(26.66%) were labelled with dermal melasma as their dermoscopic findings were greyish brown or greyish black pigmentation with an irregular pigment network. Mixed melasma was labelled in 8(13.33%) patients with mixed or diffuse reticular pigmentation of the brownish or greyish-black type seen on the dermoscopy.

Out of 36(60%) patients found to have the epidermal type of melasma on Wood's lamp examination, 6(10%) were declared dermal based on dermoscopic findings. While 6(10%) patients with dermal Melasma on Wood's lamp examination were labelled as epidermal on dermoscopic findings. 2(3.33%) of the patients with mixed melasma on Wood's lamp were found to have dermal melasma based on dermoscopic findings (Table-II).

Table-II: Concordance of Wood's lamp Findings and Dermoscopic Findings (n=60)

Wood's Lamp Findings	Dermoscopic Findings			*p*-value	Kappa Value
	Epidermal	Dermal	Mixed		
Epidermal	30(50%)	6(10%)	0(0%)	<0.001	0.597
Dermal	6(10%)	8(13.33%)	0(0%)		
Mixed	0(0%)	2(3.33%)	8(13.33%)		

DISCUSSION

In our study, the most common clinical presentation of melasma was centrofacial (37, 61.66%). Previous study reported centrofacial distribution of pigmentation to be the most common globally, while malar distribution was more common among Indians.[12] Another study showed that 47.5% of their patients had a centrofacial presentation of melasma, and 38.45 % had a malar presentation.[13]

With the help of Wood's lamp, melasma was classified into epidermal melasma in 36 (60%) Dermal melasma was detected in 14(23.33%) patients, and mixed melasma was detected in 10 (16.66%) patients. Dharni et al.13 labelled Epidermal melasma in 48.75%, Dermal melasma in 45% and mixed type in 6.25 % of their subjects on Wood's lamp examination. Manjunath *et al*.[10] classified 38 % of their patients as epidermal melasma, 54% as dermal melasma, and 8% as mixed melasma type based on Wood's lamp findings.

In our study, we noted concordance between Wood's lamp findings and dermoscopic findings in 76.66% of the patients, and the degree of agreement between Wood's lamp findings and dermoscopic findings was in moderate agreement as analysed by kappa statistics (k=0.597). In another study correlation between Wood's lamp findings and dermoscopic findings existed in 56.25% of the patients. The degree of agreement between Wood's lamp findings and dermoscopic findings was substantial, as analysed by kappa statistics (k=0.813).[14]

We also observed that in our study, there was a mild discordance

23.33% based on Wood's lamp findings and Dermoscopic findings. 10% of patients classified as epidermal melasma based on Wood's lamp were then classified into dermal melasma by Dermoscope, and 10% of patients with dermal melasma by Wood lamp later turned out to be as epidermal melasma by Dermoscope. 3.33% of patients with Mixed Melasma on Wood's lamp were later labelled as Dermal Melasma on the Dermoscope. Mild discordance was also found by another study, with 16.25% regarded as epidermal melasma by Wood's lamp, later found as dermal melasma by Dermoscope.[15]

Melasma has multifactorial aetiology, so we also looked for associations in our patients like pregnancy, ultraviolet UV radiation exposure, genetic predisposition, use of oral contraceptive pills, endocrine abnormalities and hormonal imbalance.[16,17]

Prolonged exposure to sunlight or Ultraviolet (UV) radiation is considered one of the main causative factors for hypermelanosis. In our study, all the enrolled patients (100%) had an average sunlight exposure of 2-3 hours daily.[18] The patients were exposed to sunlight either while doing house chores, working in daylight at the workplace, or travelling to and back. 15(25%) patients had a history of exacerbating their melasma when their sun exposure increased. 6(10%) of our patients gave a history of use of oral contraceptive pills. Hammerschmidt *et al*.[1] found the association of Oral contraceptive pills in 30% of their patients. We also found the relation of night creams with the onset of melasma, as 53.33 % of our female patients stated that they were either using fairness creams or used them at some time in the past.

Dermoscope is more accurate and advanced tool to be used as a screening and diagnositic tool for melasma and other pigmentation disorders and is less affected by confounding factors so we should use dermoscope in our Outpatient Departments for earlier subtyping of melasma, deciding choice of treatment and to predict prognosis.

CONCLUSION

Dermoscope is a newer and more advanced tool in that it reviews vascular and collagen changes in the skin and is less affected by confounding factors. Dermoscope should be used as a screening and diagnostic tool for melasma and other pigmentation disorders in our Outpatient Departments for earlier subtyping of melasma, deciding the treatment choice and predicting prognosis.

Conflict of Interest: None.

Authors Contribution:

Following authors have made substantial contributions to the manuscript as under:

AN & AH: Conception, study design, drafting the manuscript, approval of the final version to be published.

QUD & SS: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

SJ & US: Data acquisition, drafting the manuscript, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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