



The Dermoscopic Patterns in Common Pigmented Skin Lesions

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Authors' contributions

This work was carried out in collaboration among all authors. Author SBK, SB and HBA were involved in conception of idea and study design. Author EE did data collection and performed bench work. HBA performed the statistical analysis. Authors HM and HS managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Objective: To determine the dermoscopic patterns in common pigmented skin lesions.

Setting and duration Study: This study was conducted at Dermatology Department, Civil Hospital, Hyderabad, during October 18, 2020 to April 17, 2021.

Materials and Methods: After taking approval from hospital ethical committee and written informed consent from 150 patients, all patients with pigmented skin lesions were enrolled. Demographic information were also recorded. Detailed history and thorough dermatological, physical and systemic examination was conducted. Routine investigations and histopathology was taken wherever necessary to aid the clinical diagnosis. Dermoscopic and clinical photographs were taken after informed consent. All dermoscopic findings were studied using handheld pocket dermoscope.

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In the case of patient having multiple lesions, only a single active lesion was selected for dermoscopy.

Results: Age range in this study was from 15 to 60 years with median (IQR) age was 17 (15 -60) years and mean duration of disease was 5.67 ± 2.14 months. Among the common pigmented skin lesions, 86 (57.4%) had sharp demarcation, 29 (19.3%) had Dots and globules, 7 (4.5%) had Pseudonetwork, 12 (8%) had Homogenous structure less pigmentation, 78 (52%) had Milia-like cysts and 21 (14%) had Cerebriform pattern.

Conclusion: This study shows the high frequency of dermoscopic patterns in common pigmented skin lesions. This concludes that dermoscopy is a useful and essential technique to clinically manage pigmented skin lesions, and it plays a fundamental role in early identification of pigmented lesions.

Keywords: Pigmented skin lesions; skin problems; dermoscopic pattern.

1. INTRODUCTION

Dermal lesions are equally noticed in community and hospital practice. The etiology of dermal conditions show a discrepancy, including inflammatory lesions (eg, eczema, psoriasis), birthmarks (eg, haemangiomas, port-wine stains), dermal infections, and hair and nail diseases [1,2].

The clinical opinion is readily established in most of the conditions but some conditions also occur which are masked by unrelated symptoms. The histological assessment confirms the clinical judgment, but the biopsy in these cases requires special preparations like sedation [3,4]. Now a days, the breach among clinical and histopathological analysis of dermal diseases has been engaged by several dermal imaging techniques [5,6]. Currently the dermoscopy is growing reputation in western world, as a simple, rapid, noninvasive clinical modality [7,8]. Initially it was designed to detect only the pigmented diseases, but now the advanced machines are there, having a vast dermoscopic range of detection. Errichetti et al, first time in the history documented the dermoscopic findings of so many non-pigmented conditions in detail [9]. The typical melanocytic conditions are; lentiginos, seborrheic keratosis, solar lentigo, freckles, blue nevi, melanocytic nevi, dysplastic nevi, pigmented squamous cell carcinoma, pigmented basal carcinoma. Though there are conditions which can be correctly detected on clinical examination, but when dermoscopic findings confirms the gross findings, it will improve the confidence of the attending consultant, for that he should know the specific terminology and various algorithms used [10,11]. A research revealed the frequent dermal conditions including common melanocytic nevi as 10(22.7%) followed by Lichen planus as 6(13.6%), Dysplastic nevus

as 5(11.4%), Seborrheic keratosis as 4(9.1%), Freckles as 3(6.8%), Solar lentigo as 2(4.5%), Dysplastic actinic keratosis as 2(4.5%) and Lentiginos as 2(4.5%) [10,11]. While other works confirms the Seborrheic keratosis, the most precise dermoscopic findings were follicular/epidermal pattern (cerebriform pattern; 100% of lesions, milia-like cysts; 50%, and comedo-like openings; 37.50%), and sharp demarcation (54.17%) pigmented patterns (network 4.17%, dots and globules 16.67%, pseudonetwork 4.17 % homogenous structureless 8.33%) and vascular patterns (coma shaped 12.5% , hair pin 29.17% , linear 8.33% branched 16.67% , arborizing 4.17%). In Solar lentigo the precise dermoscopic findings are pigmented pattern (homogenous structural less , 100 % , pseudonetwork 40.00 % , dots and globules 13.33%, network 13.33%) sharp demarcation 20.00% , vascular patterns (linear 6.67% branched 6.67% , arborizing 20.00) [11]. Pigmented actinic keratosis revealed a composite characteristic pattern named "strawberry pattern" in 41.18% and 25% of conditions respectively, described by a background erythema and red pseudo-network, associated with prominent follicular openings surrounded by a white halo. In solar lentigo, structure less consistent pigmentation was recognized in all cases (100%) [12].

The rationale of our research was to determine the dermoscopic findings of usual pigmented skin diseases, to support easy detection and subsequent management. The results of the research would help to save cases from costly, uncomfortable interventional investigative measures. The further advantage would be quick detection and prompt management. Due to rarity of data the research on this issue would also enhance benefits.

2. MATERIALS AND METHODS

The cross-sectional study was conducted at Dermatology Department, Civil Hospital, Hyderabad, during October 18, 2020 to April 17, 2021. After taking approval from hospital ethical committee and written informed consent from patients, all patients with pigmented dermal problem were enrolled. All patients of ages between 15-60 years either gender are having pigmented skin lesions were included in the study. The exclusion criteria consists of those cases which were not willing to be part of study, patients having history of trauma to skin, such as wound or superficial burn injury and patient applied any topical treatment in last two weeks which alter the result of dermoscopic features were also excluded from the study.

Detailed history and dermatological examination were conducted. Routine investigations and histopathology were taken wherever necessary to aid the clinical diagnosis. All dermoscopic findings were studied using handheld pocket dermoscope DermLite II Pro with a $\times 10$ magnification keeping a distance of approximately 1 inch from the lesion. In case patients having more than one lesions, only one lesion was preferred for dermoscopy. The saved images were later re-examined by two separate observers, and the results are helpful. Variables used for dermoscopic evaluation was background color and type of the scales. In Seborrheic keratosis cerebriform pattern, comedo like opening milia like cyst, sharpe demarcation, in Solar lentigopseudonetwork, structure less area, in blue naevus homogenous structureless area, in Freckles diffuse brown sturctureless area and reticular pattern, in Acquired Melanocytic Naevi globules and reticular pattern was analyzed. Data was

entered and analyzed using SPSS version 25.0. Frequencies and percentages were expressed for qualitative variables like gender, sharp demarcation, pigment pattern and follicular/epidermal patterns. Quantitative variables like age and duration of disease was expressed by Mean \pm S.D. Data was stratified for age, gender duration and type of pigmented lesion of disease to deal with effect modifiers. For post stratification, Chi-square test was applied to see the significance. A p-value ≤ 0.05 was considered significant.

3. RESULTS

Age range in this study was from 15 to 60 years with median (IQR) age was 17 (15 -60) years and mean duration of disease was 5.67 ± 2.14 months, out of total 150 patients, 74 (49.3%) were male and 76 (50.6%) were female. The most common pigmented skin lesion was Melanocytic nevi 42 (28%) followed by Lichen Planus 27 (18%), Seborrheic Keratosis 21 (14%), Dysplastic nevus 17 (11.3%), Solar lentigo 15 (10%), freckles 11 (7.3%), Dysplastic actinic keratosis 9 (6%) and Lentiginos 8 (5.3%), shown in Table # 01. Among the common pigmented skin lesions, 86 (57.4%) had sharp demarcation, 29 (19.3%) had Dots and gobules, 7 (4.5%) had Pseudonetwork, 12 (8%) had Homogenous structure less pigmentation, 78 (52%) had Milia-like cysts and 21 (14%) had Cerebriform pattern, shown in Table 1.

When Dermoscopic patterns were stratified with respect to age, gender, duration of disease and common skin pigmented lesions, no significant difference was observed, only significant difference was observed, when Dots and Globules pattern was stratified with respect to common skin pigmented lesions, shown in Table 2 and 3.

Table 1. Distribution the common pigmented skin lesion of the patients (N=150)

Variable	Frequency	Percentage
Pigmented Skin Lesion		
• Melanocytic nevi (MN)	42	28%
• Lichen planus (LP)	27	18%
• Dysplastic nevus (DN)	17	11.3%
• Seborrheic keratosis (SK)	21	14%
• Freckles(FK)	11	7.3%
• Solar lentigo (SL)	15	10%
• Dysplastic actinic keratosis (DK)	9	6%
• Lentiginos (LG)	8	5.3%
Dermoscopic Patterns		
• Sharp demarcation	86	57.4%

Variable	Frequency	Percentage
• Dots and globules	29	19.3%
• Pseudonetwork	7	4.5%
• Homogenous structure less pigmentation	12	8%
• Milia-like cysts	78	52%
• Cerebriform pattern	21	14%

Table 2. Stratification of different variable with dermoscopic patterns (n=150)

Variable	Dermoscopic Patterns						P-value
	Sharp demarcation	Dots and globules	Pseudo network	Homogenous structure less pigmentation	Milia-like cysts	Cerebriform pattern	
Age (years)							
• 15 to 35	Yes	37	11	02	05	36	09
	No	32	58	67	64	33	60
• 35 to 60	Yes	49	18	04	08	42	12
	No	32	63	77	74	39	69
P-value		0.247	0.223	0.410	0.498	0.550	0.472
Gender							
• Male	Yes	42	12	03	06	34	10
	No	32	62	71	68	40	64
• Female	Yes	44	17	04	06	44	11
	No	32	59	72	70	32	65
P-value		0.510	0.228	0.515	0.533	0.097	0.526
Duration of disease							
• ≤ 6 months	Yes	57	18	05	07	49	15
	No	38	77	90	88	46	80
• >6 months	Yes	29	11	02	04	29	06
	No	26	44	53	51	26	49
P-value		0.243	0.518	0.627	0.627	0.514	0.83

Table 3. Stratification of dermoscopic patterns in common pigmented skin lesions with respect to duration of disease (n = 150)

Dermoscopic patterns	Common Pigmented Skin Lesion								P-value
	MN (n=42)	LP (n=27)	DN (n=17)	SK (n=21)	FK (n=11)	SL (n=15)	DK (n=9)	LG (n=8)	
Sharp demarcation									
Yes	37	06	08	10	05	05	07	08	0.000
No	05	21	09	11	06	10	02	00	
Dots and globules									
Yes	14	00	04	04	0	0	00	00	0.001
No	28	27	13	17	11	15	09	08	
Pseudonetwork									
Yes	02	03	00	01	00	01	00	00	0.677
No	40	24	17	20	11	14	09	08	
Homogenous structure less pigmentation									
Yes	06	00	03	01	00	02	00	00	0.185
No	36	27	14	20	11	13	09	08	
Milia-like cysts									
Yes	38	04	06	21	00	04	02	03	0.000
No	04	23	11	00	11	11	07	05	

Dermo-Scopic patterns	Common Pigmented Skin Lesion								P-value
	MN (n=42)	LP (n=27)	DN (n=17)	SK (n=21)	FK (n=11)	SL (n=15)	DK (n=9)	LG (n=8)	
Cerebri-form pattern									
Yes	00	00	00	21	00	00	00	00	0.000
No	42	27	17	00	11	15	09	08	

4. DISCUSSION

Dermoscopy is widely practiced all over the world. The majority of work is done in Caucasian patients and very little is had some significant awareness of examples of dermoscopy in skin of colour [13,14]. People with darker skin have a lower risk of developing skin cancer, but the truth is that it can lead to delayed diagnosis and even worse diagnosis. It has demonstrated helpful for the assessment of different pigmented and non-pigmented lesions in dark races [15].

Studies have shown that the equivalent dermoscopic rules created and utilized by white races could be applied for the investigation of skin lesions in brown complexions with a high rate of reproducibility [12,13,16]. Traditionally dermoscopy has been used to diagnose benign and malignant lesions [8]. But not only that, its importance in distinguishing between and non pigmented benign lesions cannot be over estimated.

In one study [5], authors investigated histologically diagnosed skin lesions of normal skin that are medically challenging and previously studied their dermoscopic images. These included early seborrheic keratosis (SK), pigmented actinic keratosis (AK), lentigomaligna and solar lentigo. They used algorithms to diagnose facial lesions of normal color [9]. Studies have shown that the most obvious dermoscopic features are the follicular / epidermal pattern and sharp demarcation [8,9]. Therefore, the main feature of the dermoscopic is the various types of which can be described as ridges, fingerprint-like structures, "fat fingers," or cerebri-form pattern. Despite the large range of descriptive words, all of them correspond to the same histological features of epidermal acanthosis and different degree of keratinocyte melanization [17].

The prominent pigment pattern was occurred in pigmented actinic keratosis lesions (pseudonetwork in 52.94% of lesions, dots and globules in 47.06%, and homogenous

structureless pigmentation in 47.06%) and vascular pattern, mainly in the form of perifollicular/crown pattern. These findings are associated with an abnormal melanization of keratinocytes in histopathology. The vascular sample was obtained primarily in the form of a perifollicular / crown sample (at 41.18%) [8,9]. While in our study observed common pigmented skin lesions, 86 (57.4%) had sharp demarcation, 29 (19.3%) had Dots and globules, 7 (4.5%) had Pseudonetwork, 12 (8%) had Homogenous structure less pigmentation, 78 (52%) had Milia-like cysts and 21 (14%) had Cerebriform pattern. Overall more than 3 dermoscopic features found in lentigo maligna LM was vascular, pigment or both components. One study conducted by Sharif [6] regarding detected 3 of the 4 classic criteria pigment components (pseudonetwork, pigmented dots and globules). One study [8] reported high frequency three additional vascular criteria in LM were increased density of the vascular network (58%), red rhomboidal structures (40%), and target-like patterns (41%).

Although 62.5% of our lesions were identified, we found that the vascular component of the LM did not show any specific characteristic features because it showed one or more of the following specimens in each lesion: coma-shaped vessels, arborising vessels, linear vessels, locking, hairpin vessels, branching vessels, and kirie Vessels. Further research is needed on a large number of patients to confirm vascular dermoscopic procedures. Historically, LM has shown the same growth in different melanocytes with different shapes and sizes at the epidermis and dermopidermal junction [18]. In our study, The most common pigmented skin lesion was Melanocytic nevi 42 (28%) followed by Lichen Planus 27 (18%), Seborrheic Keratosis 21 (14%), Dysplastic nevus 17 (11.3%), Solar lentigo 15 (10%), freckles 11 (7.3%), Dysplastic actinic keratosis 9 (6%) and Lentiginos 8 (5.3%).

5. CONCLUSION

This study shows the high frequency of dermoscopic patterns in common pigmented skin

lesions. It concludes that dermoscopy is a useful and important technique in the clinical management of pigmented skin lesions and that it plays an important role in early detection of pigmented lesions. Sample analysis should be read and distributed as it is the most accurate way to diagnose pigmented skin lesions.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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