Section: DVL

Original Research Article

A DESCRIPTIVE STUDY OF DERMATOSCOPIC PATTERNS IN ACQUIRED HYPERMELANOSIS IN A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Background: Skin pigmentation is one of the primary changeable characteristics in humans. Acquired hypermelanosis is a set of diverse illnesses that are widely encountered in clinical practice and have the trait of elevated skin pigmentation. It is more common in darker races. Both light & photosensitising substances have a part in the aetiology. **Objectives:** To assess the different dermoscopic patterns seen in conditions of acquired hypermelanosis.

Material and Methods: Study Design: Hospital-based observational descriptive study. **Study area:** Department of Dermatology Venereology and Leprosy, Narayana Medical College, Nellore. **Study Period:** 1 year. **Study population:** Participants in the study were all consenting male and female patients with acquired hypermelanosis over the age of five years, who attended the outpatient clinic at the Narayana Hospital, Nellore and were seen by clinicians in the Department of DVL. **Sample size:** The study consisted of a total of 76 subjects. **Sampling method:** Simple random method.

Results: Melasma accounted for most cases (44.5 %), followed by Acanthosis Nigricans (17 %). Multiple combinations of patterns, dermoscopic findings, and their relationship to disease, age, and gender were shown in Tables 7 to 10 of this dissertation. In our study, Melasma accounted for most cases 34/76(44.5 %).

Conclusion: Acquired hypermelanosis is one of the most cosmetically unpleasant complaints that dermatologists face. Multiple aetiologies with diverse clinical outcomes and therapeutic methods complicate care.

Key Words: Hypertmelanosis, dermoscopic patterns, Melasma.

INTRODUCTION

Skin pigmentation is one of the primary changeable characteristics in humans. Acquired hypermelanosis is a set of diverse illnesses that are widely encountered in clinical practice and have the trait of elevated skin pigmentation. It is more common in darker races. Both light & photosensitising substances have a part in the aetiology. Acquired hypermelanosis can be caused by a variety of circumstances, including skin disorders, systemic disease, or environmental conditions that produce an increase in melanin levels. People with darker skin are more susceptible to pigmentary disorders because of contrast created by pigment in darker skin and the tendency to develop post-inflammatory hyperpigmentation. Hyperpigmentation affects around 10.8% of adult patients who visit dermatological outpatient departments (OPDs) in western India. More than 80% of the population has skin colour on their face, regardless of age or gender.[1]

Pigmentary illnesses have overlapping histological features that vary depending on the stage of the disease. A dermoscopy is a non-invasive diagnostic tool that detects minute clinical patterns in skin lesions. Because it can assess the entire affected area, it is a reliable and effective diagnostic, prognostic, and therapeutic efficacy monitoring tool. As a result, the dermoscopy fills a gap between

clinical dermatology and dermatopathology. It also renders the epidermis transparent, allowing the human eye to see deeper into skin tissues such as the deep dermis. It was once used to detect pigmented lesions and melanoma, but it is now used to detect inflammatory diseases, infections, and infestations, as well as hair and nail abnormalities. Pigmentaroscopy first assesses the colour of the lesion. Dermoscopy detects dark hues, which reveal the position of melanin in the epidermis. It also detects patterns in skin lesions.

Objectives: To assess the different dermoscopic patterns seen in conditions of acquired hypermelanosis.

MATERIALS AND METHODS

Study Design: Hospital-based observational descriptive study.

Study area: Department of Dermatology Venereology and Leprosy, Narayana Medical College, Nellore.

Study Period: 1 year.

Study population: Participants in the study were all consenting male and female patients with acquired hypermelanosis over the age of five years, who attended the outpatient clinic at the Narayana Hospital, Nellore and were seen by clinicians in the Department of DVL.

Sample size: The study consisted of a total of 76 subjects.

Sampling method: Simple random method.

Inclusion Criteria: Participants in the study were all consenting male and female patients with acquired hypermelanosis over the age of five years, who attended the outpatient clinic at the Narayana Hospital, Nellore and were seen by clinicians in the Department of DVL.

Exclusion Criteria: Patients who had received any topical treatment or had undergone a chemical peel, microdermabrasion, or laser procedure within the previous month were excluded from the research.

Ethical consideration: Institutional Ethical committee permission was taken before the commencement of the study.

Study tools and Data collection procedure

All patients were evaluated for demographic factors such as age, gender, marital status, geographical location, family history, medical history, and clinical examination, and digital photos were collected.

The dermoscopic examination was performed with a Dermlite DL4 dermoscope, and photographs were taken in manual mode with a Oneplus 6T mobile phone. As the brightness of the dermoscope's light source decreases with use, it is ensured that the dermoscope is completely charged. Four photographs were taken from the damaged area. Two dermatologists conducted independent analyses of the images. Following the processing of all photos, the dermoscopic pattern was interpreted and documented. Dermoscopy was interpreted according to a pattern documented in the literature. The presence of reticulo-globular pattern, perifollicular brown-black globules, telangiectasia, granules, or a non-specific pattern was documented.

Statistical Analysis

Data were collected using a pre-formatted case record form; the data was then loaded into a Microsoft Excel spreadsheet 2016, and cleansed for typographical mistakes, and duplicate entries. The records were subsequently homogenized for further statistical analysis. IBM SPSS Statistics for Windows, IBM Corp., Armonk, New York. Version 21.0 was used for statistics. Results were tabulated, and data were reported as mean, standard deviation, actual numbers and %ages. Since there were fewer patients across many groups, the Chi-square test was not used to make conclusions across two sets of categorical data.

RESULTS

A total of 76 patients took part in the research investigation. The average age of the patients is 34.36 ±9.66 years. Most patients (88.2 %) were between the ages of 18 and 41. Females constitute most of our patients (64.5 %). 43.4b% of the population are homemakers. Only 12 % had continual exposure to the sun. Patients who use sunscreen lotion account for 21% of all patients. Topical indigenous preparations are used by 33% of the population. A familial history of hypermelanosis was found in 26% of the participants. [Table 1]

The face accounted for 69.7 % of all lesions, with the remaining lesions (30.3 %) distributed over the neck, trunk, forearm, legs, and shoulders in declining order of location. Dark brown lesions accounted for 53% of all lesions, with light brown lesions accounting for 41%. On dermoscopic evaluation of the lesions, a total of 121 patterns were found to be present. The following is the order in which lesions emerge in descending order: 30% Reticulo Globular, 17% Annular Granular, 10% Telangiectasia, 9% Black Dots, 8% Crista Cutis & Sulci Cutis, 7% Broken Pigment Network, 6% Nonspecific, 5% Exaggerated Pigment Network, 4% Brown Globules, 2% Hem Like Pattern, 2% Hubs & Spokes. [Table 5]

Melasma

Melasma accounted for most cases (44.5 %), followed by Acanthosis Nigricans (17 %). Multiple combinations of patterns, dermoscopic findings, and their relationship to disease, age, and gender were shown in the tables 7 to 10 of this dissertation. In our study, Melasma accounted for most cases 34/76(44.5 %). Mean age of melasma patients is 35.9±6.9 years. It was observed that 27/34 (79.5%) are females and 7/34 (20.5%) are males. Only 7/34 (20.5%) use sunscreen, 10/34 (29.5%) use Topical Indigenous Preparation. 12/34 (35.3%) had family history. Location of lesion in all 34/34 cases is face.

Colour of lesion in 27/34 (79.5%) are light brown and 7/34 (20.5%) are dark brown. Patterns of lesions are as follows in descending order 35% Reticulo-Globular, 21% Reticulo-Globular + Broken Pigment Network, 15% Non-Specific, 12% Reticulo-Globular + Annular Granular, 12% Reticulo-Globular + Telangiectasia, 3% Broken Pigment Network, 3% Reticulo-Globular + Annular Granular+ Broken Pigment Network.

Acanthosis nigricans (AN)

Acanthosis nigricans was detected in 13/76 cases (17%). The mean age of patients is 28.2±±years. The females and males are 5/13 (38.5%) and 8/61.5%) respectively. Sunscreen lotions or creams are used by 4/13 (30.8%). There was no traditional indigenous preparation used by any of our patients. A family history of Acanthosis nigricans was found in 3/13 patients (23.1 %). Lesions were found on the face in 2/13 (15.4 %) of cases and on the neck in 11/13 (84.6 %). Lesions in 11/13 (84.6 %) are Dark Brown in colour, while lesions in 2/13 (15.4 %) is Light Brown in colour. The pattern of lesions on dermoscope in from the most frequent to the least frequent are 54% Crista Cutis &Sulci Cutis + Black Dots, 15% Exaggerated Pigment network, 15% Exaggerated Pigment network + Crista Cutis &Sulci Cutis + Black Dots, 8% Exaggerated Pigment network + Crista Cutis &Sulci Cutis, 8% Exaggerated Pigment network + Black Dots.

Post inflammatory hyperpigmentation (PIH)

PIH was detected in 5/76 cases (7%). The mean age of patients is 24.6±5.1 Years. Majority of our patients were males 3/5 (60%) followed by females 2/5 (40%). Intermittent sun exposure was seen in all our patients 5/5 (100%). Two patients used sunscreen lotions or creams (40%). Two patients use traditional indigenous preparations (40%). None of our patients had family history of disease. Site of lesion was seen on forearm in two patients (40%) followed by face, trunk, and leg in one patient each. Colour of lesions in all our patients is dark brown 5/5 (100%). 3/5 (60%) of our patients is showing reticulo globular patterns on dermoscopy and in remaining 2/5 (40%) Annular globular pattern is seen.

Exogenous ochronosis (EO)

In our study, EO was found in 5/76 cases (7%). The mean age of patients is 41.0± 9.8 Years. Majority of our patients were females 3/5 (60%) followed by males 2/5 (40%). Intermittent sun exposure was seen in all our patients 3/5 (60%) and continuous exposure in 2/5 (40%) patients. None of or patients applied sunscreen lotions or creams (100%). All patients use traditional indigenous preparations (100%). Only 1/5 (20%) of our patients had family history of disease. In all the patients site of lesion was on face (100%). Colour of lesions in all our patients is dark brown 5/5 (100%). In 3/5 (60%) patients' Annular globular pattern and in remaining 2/5 (40%) patients Annular globular+ Telangiectasia pattern is seen on dermoscopy.

Lichen Planus Pigmentosus (LPP)

In our study, LPP was found in 3/76 cases (5%). The mean age of patients is 43.3± 2.3 Years. Majority of our patients were females 3/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 1/3 (33.3%) and continuous exposure in 2/3 (66.7%) patients. None of or patients applied sunscreen lotions or creams (100%). Only 2/3 (66.7%) patients use traditional indigenous preparations. Family history of disease was seen only in 1/3 (33.7%). In our study patients site of lesion was on face in 2/3 (66.7%) and 1/3 (33.3%) on Trunk. Colour of lesions in our patients is dark brown 2/3 (66.7%) and 1/3 (33.3%) it is Slate Grey. In 3/3 (100%) patients Annular globular pattern is seen on dermoscopy. Additionally in one patient hem like pattern is also observed.

Pigmentary Demarcation Lines (PDL)

In our study, PDL was found in 3/76 cases (4%). The mean age of patients is 28.0± 11.2 Years. Majority of our patients were females 3/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 3/3 (100%) patients. None of or patients applied sunscreen lotions or creams (100%). Only 2/3 (66.7%) patients use traditional indigenous preparations. Family history of disease was seen only in 1/3 (33.7%). In our study patients site of lesion was on face in 2/3 (66.7%) and 1/3 (33.3%) on Trunk. The colour of lesions in our patients is dark brown 3/3 (100%). In PDL, all 3/3 (100%) cases were showing Brown Globules on dermoscopy.

Pigmentary Contact Dermatitis (PCD)

In our study, PCD was found in 3/76 cases (4%). The mean age of patients is 35.0± 3.4 Years. The majority of our patients were females 2/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 2/3 (66.7%) and continuous exposure in 1/3 (33.3%) patients. One of our patients 1/3 (33.3%) applied sunscreen lotions or creams. All 3/3 (100%) patients use traditional indigenous preparations. A family history of the disease was not seen in any of our patients. In our study patient site of lesion was on face in 3/3 (100%). Colour of lesion in all 3/3 (100%) is dark brown. On dermoscopy, in all 3/3 (100%) in PCD cases the pattern is Reticulo Globular + Telangiectasia.

Periorbital Hypermelanosis (POH)

In our study, POH was found in 3/76 cases (4%). The mean age of patients is 28.0± 4.5 Years. Majority of our patients were females 2/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 1/3 (33.3%) and continuous exposure in 2/3 (66.7%) patients. None of or patients applied sunscreen lotions or creams (100%). Only 2/3 (66.7%) patients use traditional indigenous preparations. Family history of disease was seen only in 2/3 (66.7%). In our study patients site of lesion was on face in 3/3 (100%). Colour of lesion in all 3/3 (100%) is light

brown. Dermoscopy patters in all 3/3 (100%) cases is Annular Granular + Telangiectasia.

Erythema Dyschromicum Perstans

In our study, POH was found in 2/76 cases (3%). The mean age of patients is 44.0± 9.8 Years. All our patients were females 2/2 (100%) had Intermittent sun exposure. None of our patients 2/2 (100%) applied sunscreen lotions or creams. Only 1/2 (50%) patients use traditional indigenous preparations. Family history of disease was seen only in 1/2 (50%). In one patient site of lesion was on face in 1/2 (50%), while in other it was on trunk (50%). Colour of lesion in all 1/2 (100%)is dark brown, while in other it was bluish grey. Dermoscopy patters in all 2/2 (100%) cases is Annular Granular + Hem like pattern.

Macular Amyloidosis (MA)

In our study, MA was found in 2/76 cases (3%). The mean age of patients is 41.0± 4.2 Years. All our patients were females 2/2 (100%) had Intermittent sun exposure. None of our patients 2/2 (100%) applied sunscreen lotions or creams or used traditional indigenous preparations. Family history of disease was not seen in any of our patients. In one patient site of lesion was on face in 1/2 (50%), while in other it was on trunk (50%). Colour of lesion in all 2/2 (100%) is dark brown. Dermoscopy patters in all 2/2 (100%) cases is H & S like pattern.

Becker's Nevus (BN), Fixed Drug Eruption (FDE), Lichen Amyloidosis (LA)

BN is observed in one patient. In that patient a dark brown hyperpigmentation on shoulder, with a no history in family and intermittent sun exposure, not used traditional indigenous preparations. On dermoscopy Reticulo Globular pattern is observed.

FDE is observed in one male patient of 57 years old, with intermittent sun exposure, not using any sunscreen lotions or used traditional indigenous preparations, with no family history. Location, colour and pattern of lesion is trunk, BI and annular globular pattern respectively.

LA is seen in 59 years old male patient with intermittent sun exposure, not using any sunscreen lotions or used traditional indigenous preparations, with no family history. Location, colour and pattern of lesion is legs, light brown and H&S pattern respectively.

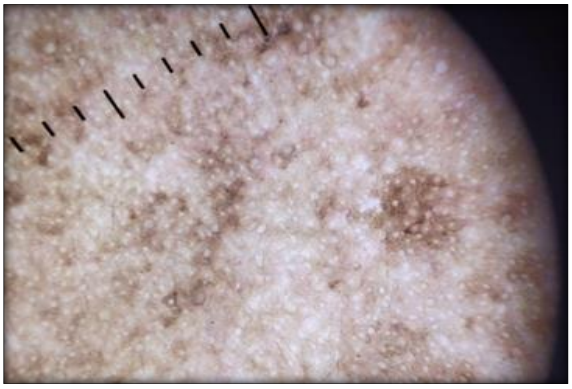

Figure 1: Reticuloglobular pattern

Figure 2: Hem Like Pattern

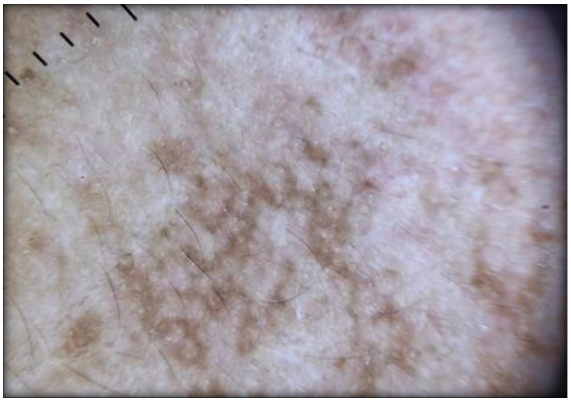

Figure 3: Broken Pigment Network

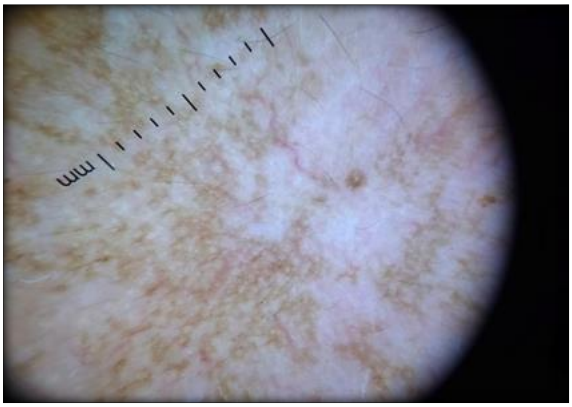

Figure 4: Telangiectasias

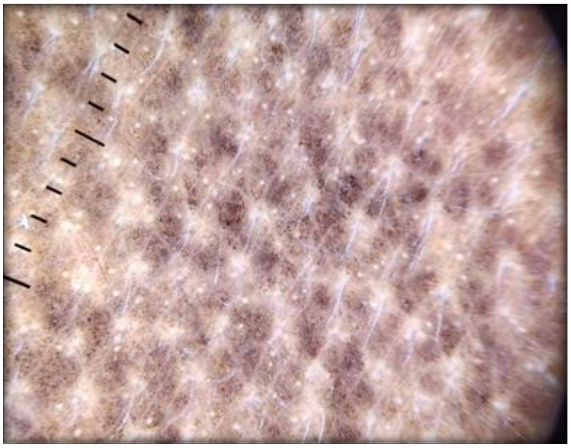

Figure 5: Hubs and Spokes Pattern

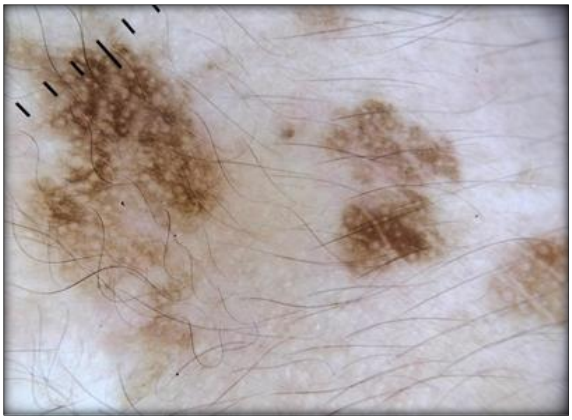

Figure 6: Honeycomb Structures

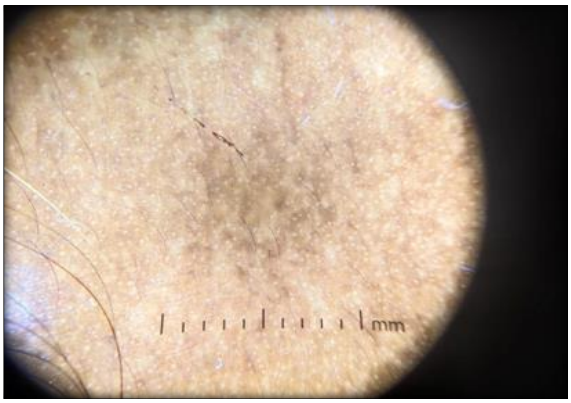

Figure 7: Nonspecific Pattern

Figure 8: Linear Crista Cutis & Sulci Cutis

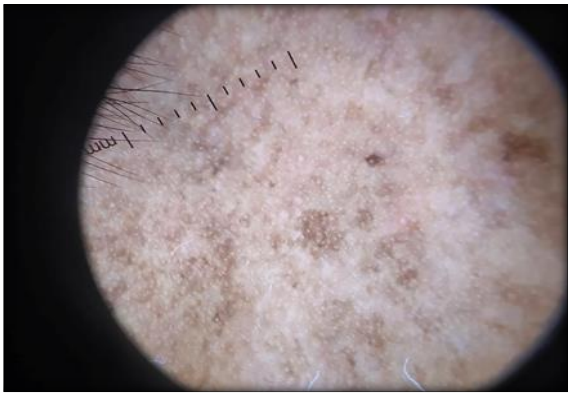

Figure 9: Brown Globules

Figure 10: Black Dots

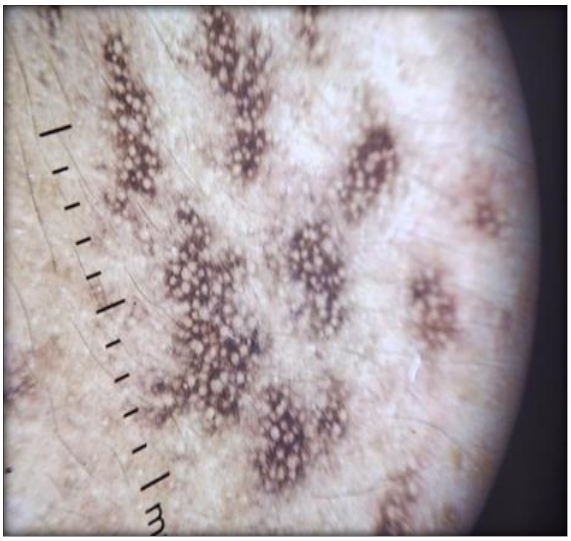

Figure 11: Exaggerated Pigment Network

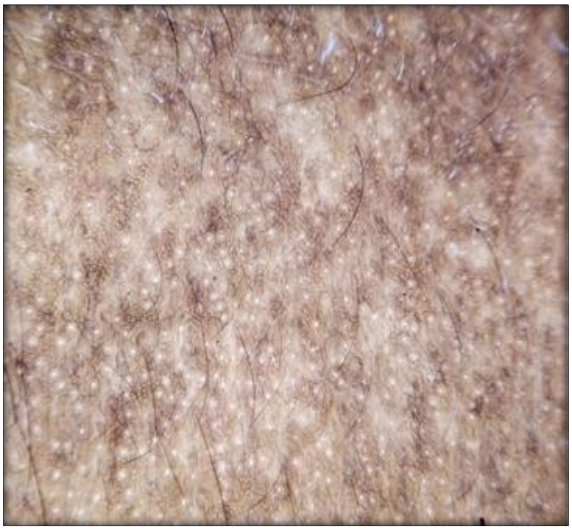

Figure 12: Annular Granular Structures

Table 1: Demographics of patients

Table-1	N	%
Age		
<= 9.0	1	1.3
10.0 - 17.0	2	2.6
18.0 - 25.0	10	13.2
26.0 - 33.0	22	28.9
34.0 - 41.0	23	30.3
42.0 - 49.0	12	15.8
50.0 - 57.0	6	7.9
Total	76	100.0
Gender		
Female	49	64.5
Male	27	35.5
Total	76	100.0
Occupation		
Homemaker	33	43.4
Professional Skilled	13	17.1
Student	9	11.8
Unskilled	21	27.6
Total	76	100.0
Sun Exposure		
Continuous	9	12
Intermittent	67	88
Total	76	100
Sunscreen use		
No	60	79
Yes	16	21
Total	76	100
Topical Indigenous Preparation Use		
No	51	67
Yes	25	33
Total	76	100
Family history		
No	56	74
Yes	20	26
Total	76	100

Table 2: Site of lesions

Table 2- Site of lesions	n	%
Face	53	69.7
Non-Face	23	30.3
Neck	11	14.5
Trunk	6	7.9
Forearm	3	3.9
NA	3	3.9
Legs	2	2.6
Shoulder	1	1.3
Total	76	100

Table 3: Colour of lesion

Table 3- Colour of lesion	n	%
Dark Brown	40	53
Light Brown	31	41
Black	3	4
Bluish Grey	1	1
Slate Grey	1	1
Total	76	100

Table 4: Pattern of lesion on Dermoscopy

Table 4- Pattern of lesion on Dermoscopy	n	%
Reticulo Globular	35	29
Annular Granular	21	17
Telangiectasia	12	10
Black Dots	11	9
Crista Cutis& Sulci Cutis	10	8
Broken Pigment Network	9	7
Non-Specific	7	6
Exaggerated Pigment network	6	5
Brown Globules	5	4
Hem Like Pattern	3	2

Hubs & Spokes	2	2
Total	121	100

Table 5: Diagnosis of hyperpigmentation diseases

Table 6- Diagnosis of hyperpigmentation diseases	**n**	**%**
Melasma	34	45
Acanthosis Nigricans	13	17
Exogenous Ochronosis	5	7
Post Inflammatory Hyperpigmentation	5	7
Lichen Planus Pigmentosus	3	4
Pigmentary Contact Dermatitis	3	4
Pigmentary Demarcation Lines	3	4
Periorbital Hyper melanosis	3	4
Erythema Dyschromicum Perstans	2	3
Macular Amyloidosis	2	3
Becker's Nevus	1	1
Fixed Drug Eruption	1	1
Lichen Amyloidosis	1	1
Total	76	100

Table 6: Cross Tabulation Diagnosis versus Dermoscopic Patterns

	Table-6- Cross tabulation Diagnosisversus Dermoscopic patterns													**Total**
	AN	**BN**	**EDP**	**EO**	**FDE**	**LA**	**LPP**	**MA**	**Mel**	**PCD**	**PDL**	**PIH**	**POH**	
Patterns								1						1
AG				2	1		2					2		7
AG+ HLP			2				1							3
AG+NS				1										1
AG+TL				2									3	5
BPN									1					1
BG											3			3
CC & SC+B	7													7
EP	2													2
EP+BD	1													1
EP+ CC&SC	3													3
H&S						1		1						2
NS									5					5
RG									12			3		15
RG+ AG									5					5
RG+ BPN									7					7
RG+NS		1												1
RG+TL									4	3				7
Total	13	1	2	5	1	1	3	2	34	3	3	5	3	76

RG-Reticulo Globular, AG-Annular Granular, TL-Telangiectasia, BD-Black Dots, CC & SC- Crista Cutis &Sulci Cutis, BPN- Broken Pigment Network, NS-NonSpecific, EP-Exaggerated Pigment network, BG-Brown Globules, HLP- Hem Like Pattern, H&S-Hubs & Spokes

Acanthosis Nigricans, Becker's Nevus, Erythema Dyschromicum Perstans, Exogenous Ochronosis, Fixed Drug Eruption, Lichen Amyloidosis, Lichen Planus Pigmentosus, Macular Amyloidosis, Melasma, Periorbital Hyper melanosis, Pigmentary Contact Dermatitis, Pigmentary Demarcation Lines, Post Inflammatory Hyperpigmentation

Table 7: Combination of Dermoscopic Patterns

Table 7- Combination of Dermoscopic patterns	n	%
RG	15	19.7
AG	7	9.2
CC&SC, BG	7	9.2
RG, BPN	7	9.2
RG, TL	7	9.2
AG, TL	5	6.6
NS	6	7.9
RG, AG	5	6.6
AG, HLP	3	3.9
BG	3	3.9
EP, CC&SC	3	3.9
EP	2	2.6
H&S	2	2.6
AG, NS	1	1.3
BPN	1	1.3
EP, BD	1	1.3

RG, NS	1	1.3
Total	76	100

RG-Reticulo Globular, AG-Annular Granular, TL-Telangiectasia, BD-Black Dots, CC & SC-Crista Cutis &Sulci Cutis, BPN- Broken Pigment Network, NS-Non-Specific, EP-Exaggerated Pigment network, BG-Brown Globules, HLP- Hem Like Pattern, H&S-Hubs & Spokes

Table 8: Cross tabulation age in years versus Dermoscopic patterns

Dermoscopic Patterns	<= 9.0	10.0 - 17.0	18.0 - 25.0	26.0 - 33.0	34.0 - 41.0	42.0 - 49.0	50.0 - 57.0	Total
AG	0	0	0	0	3	3	1	7
AG, HLP	0	0	0	0	1	1	1	3
AG, NS	0	0	0	1	0	0	0	1
AG, TL	0	0	1	2	0	1	1	5
BPN	0	0	0	0	1	0	0	1
BG	0	0	2	0	1	0	0	3
CC & SC, BG	0	0	4	3	0	0	0	7
EP	0	0	0	1	1	0	0	2
EP, BD	0	0	1	0	0	0	0	1
EP, CC &	0	0	0	1	1	1	0	3
H&S	0	0	0	0	0	1	1	2
NS	0	0	0	3	1	0	1	5
RG	1	1	1	5	4	2	1	15
RG, AG	0	0	0	2	1	1	0	5
RG, BPN	0	0	0	2	4	1	0	7
RG, NS	0	1	0	0	0	0	0	1
RG, TL	0	0	1	2	4	0	0	7
Total	1	2	10	22	22	12	6	76

RG-Reticulo Globular, AG-Annular Granular, TL-Telangiectasia, BD-Black Dots, CC & SC- Crista Cutis &Sulci Cutis, BPN- Broken Pigment Network, NS-Non-Specific, EP-Exaggerated
Pigment network, BG-Brown Globules, HLP- Hem Like Pattern, H&S-Hubs & Spokes

Table 9: Cross tabulation Gender versus Dermoscopic patterns

Patterns	Female	Male	Total
AG	3	4	7
AG, HLP	3	0	3
AG, NS	1	0	1
AG, TL	2	3	5
BPN	1	0	1
BG	2	1	3
CC & SC, BG	3	4	7
EP	0	2	2
EP, BD	1	0	1
EP, CC&SC	1	2	3
H&S	1	1	2
NS	3	2	5
RG	13	2	15
RG, AG	3	2	5
RG, BPN	5	2	7
RG, NS	0	1	1
RG, TL	6	1	7
Total	48	27	76

RG-Reticulo Globular, AG-Annular Granular, TL-Telangiectasia, BD-Black Dots, CC & SC-Crista Cutis &Sulci Cutis, BPN- Broken Pigment Network, NS-NonSpecific, EP- Exaggerated Pigment network, BG-Brown Globules, HLP- Hem Like Pattern, H&S-Hubs & Spokes

DISCUSSION

Acquired Hyperpigmentation Melasma

Melasma is a chronic acquired hypermelanosis of the skin, characterized by irregular brown macules distributed on sun-exposed areas of the body, especially on the face.[2,3] Melasma is more common in women, hormonal. Cheek, forehead, upper lip, nose, and chin are most involved. Rarely, the neck, forearms, arms, and sternum are affected.[4] Melasma is the most common cause of facial hypermelanosis in Indians.[5] The significance of cutaneous vasculature in melasma etiology has recently gained attention. Many patients have telangiectatic erythema localized to the melasma lesion.[6,4,7] The number of vessels and pigmentation in melasma correlated significantly. VEGF expression was elevated in melasma lesional skin.[8] Melasma lesions are distinguished by diffuse reticular pigmentation that is superimposed by dark brown or blue black hyperpigmented granules, globules, and blotches that are primarily perifollicular, sparing the follicular openings.[9,10] Majority of patients are females and belong to fourth decade. All our patients had facial melanosis. We have found that our study results are consistent with Hassan et al observations. In his study, Hassan et al found that 68% of patients were females and

belonged to the third decade.[11] 35.3% of our patients had a family history of face hyperpigmentation. Melasma is a pigmentary condition caused by genetic causes.[12] This may explain their positive family history.

Our research found that most individuals' lesions are light brown, then dark brown. Both colours show epidermal pigmentation. Reticulo-Globular pattern in majority of cases followed by mixed and dermal patterns. Patterns of lesions are as follows in descending order 35% Reticulo-Globular, 21% Reticulo-Globular + Broken Pigment Network, 15% Non-Specific, 12% Reticulo-Globular + Annular Granular, 12% Reticulo-Globular + Telangiectasia, 3% Broken Pigment Network, 3% Reticulo-Globular + Annular Granular+ Broken Pigment Network. Our findings were consistent with those of Nanjundaswamy et al, who discovered epidermal, mixed, and dermal patterns in melasma patients. Archiform formations, telangiectasias, atrophy, and exogenous ochronosis were also recognized as additional features.[13]

Similar observations were found by Neema S et al, where reticuloglobular pattern on dermoscopy was found in 83 % of patients with melasma. Dermoscopy revealed a patchy brown black pigment in 70% of cases. 28 % had granular pigments or dots. These dots reflect dermal or mixed melasma.[14] Sonthalia et al reported that, in addition to brown granules, globules, annular and arcuate structures. Few fields showed increased vascularity and telangiectasias.[15,16]

Acanthosis Nigricans

In our study, AN was detected in 17%. None of our patients had hereditary AN identified. The mean age of patients is 28.2±years. Majority of our patients were males. Sunscreen lotions or creamsare used by 30.8%. There was no traditional indigenous preparation used by any of our patients. A family history of Acanthosis nigricans was found in 23.1 %. Lesions were found on the face in 2/13 (15.4 %) of cases and on the neck in 11/13 (84.6 %). Facial involvement is rare in AN. In our study, 2 patients had lesions of AN o face. Panda et al also showed facial involvement.[17] Obesity-related acanthosis nigricans will improve with weight loss, and drug-induced acanthosis nigricans is likely to resolve when the drug is ceased. Hereditary variants may or may not fade with age, and malignancy-associated variants may, after a malignancy is removed.[18]

Lesions in 11/13 (84.6 %) are Dark Brown in colour, while lesions in 2/13 (15.4 %) is Light Brown in colour. The pattern of lesions on dermoscope in from the most frequent to the least frequent are 54% Crista Cutis &Sulci Cutis + Black Dots, 15% Exaggerated Pigment network, 15% Exaggerated Pigment network + Crista Cutis & Sulci Cutis + Black Dots, 8% Exaggerated Pigment network + Crista Cutis & Sulci Cutis, 8% Exaggerated Pigment network + Black Dots. We found hyperpigmented dots and aberrant structure of crista cutis and sulcus cutis. Our findings are similar to a report from Japan, where the dermoscopic images showed an aberrant skin structure of linear crista cutis and sulcus cutis, and hyperpigmented dots in crista cutis.[19,16]

Post inflammatory hyperpigmentation (PIH)

In our study, PIH was found in 5/76 cases (7%). The mean age of patients is 24.6±5.1 Years. Majority of our patients were males 3/5 (60%) followed by females 2/5 (40%). Intermittent sun exposure was seen in all our patients 5/5 (100%). Two patients applied sunscreen lotions or creams to their skin (40%). Two patients use traditional indigenous preparations (40%). There was no family history of disease. The forearm was the site of lesion in two individuals (40 %), followed by the face, trunk, and leg in one patient each (20%). Colour of lesions in all our patients is dark brown 5/5 (100%). On dermoscopy, 3/5 (60%) of our patients had reticulo globular patterns, whereas the remaining 2/5 (40%) have an annular globular pattern.

Exogenous ochronosis (EO)

In our study, EO was found in 5/76 cases (7%). The mean age of patients is 41.0± 9.8 Years. Majority of our patients were females 3/5 (60%) followed by males 2/5 (40%). Intermittent sun exposure was seen in all our patients 3/5 (60%) and continuous exposure in 2/5 (40%) patients. None of or patients applied sunscreen lotions or creams (100%). All patients use traditional indigenous preparations (100%). Only 1/5 (20%) of our patients had family history of disease. In all the patients site of lesion was on face (100%). Colour of lesions in all our patients is dark brown 5/5 (100%). In 3/5 (60%) patients' Annular globular pattern and in remaining 2/5 (40%) patients Annular globular+ Telangiectasia pattern is seen on dermoscopy.

Lichen Planus Pigmentosus (LPP)

In our study, LPP was found in 3/76 cases (4%). The mean age of patients is 43.3± 2.3 Years. Majority of our patients were females 3/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 1/3 (33.3%) and continuous exposure in 2/3 (66.7%) patients. None of or patients applied sunscreen lotions or creams (100%). Only 2/3 (66.7%) patients use traditional indigenous preparations. Family history of disease was seen only in 1/3 (33.7%). In our study patients site of lesion was on face in 2/3 (66.7%) and 1/3 (33.3%) on Trunk. Colour of lesions in our patients is dark brown 2/3 (66.7%) and 1/3 (33.3%) it is Slate Grey. In 3/3 (100%) patients Annular globular pattern is seen on dermoscopy. Additionally, in one patient hem like pattern is also observed. Sharma et al. has are described that the distribution patterns of dots and globules as "hem-like," "arcuate," "incomplete reticular," and "complete reticular."[20] The main dermoscopic patterns of lichen planus pigmentosus are represented by a diffuse, structureless, brownish pigmentation and/or fine/coarse, grey-blue/brown dots/globules, perifollicular/annular pigmentation and white dots are other less common findings.[21,22]

Pigmentary Demarcation Lines (PDL)

In our study, PDL was found in 3/76 cases (4%). The mean age of patients is 28.0± 11.2 Years. Majority of our patients were females 3/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 3/3 (100%) patients. None of or patients applied sunscreen lotions or creams (100%). Only 2/3 (66.7%) patients use traditional indigenous preparations. Family history of disease was seen only in 1/3 (33.7%). In our study patients site of lesion was on face in 2/3 (66.7%) and 1/3 (33.3%) on Trunk. Colour of lesions in our patients is dark brown 3/3 (100%). In PDL, all 3/3 (100%) cases were showing Brown Globules on dermoscopy.[16]

Pigmentary Contact Dermatitis (PCD)

In our study, PCD was found in 3/76 cases (4%). The mean age of patients is 35.0± 3.4 Years. Majority of our patients were females 2/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 2/3 (66.7%) and continuous exposure in 1/3 (33.3%) patients.

Periorbital Hyper melanosis (POH)

In our study, POH was found in 3/76 cases (4%). The mean age of patients is 28.0± 4.5 Years. Majority of our patients were females 2/3 (66.7%) followed by males 1/3 (33.3%). Intermittent sun exposure was seen in all our patients 1/3 (33.3%) and continuous exposure in 2/3 (66.7%) patients. None of or patients applied sunscreen lotions or creams (100%). Only 2/3 (66.7%) patients use traditional indigenous preparations. Family history of disease was seen only in 2/3 (66.7%). In our study patients site of lesion was on face in 3/3 (100%).

Erythema Dyschromicum Perstans

In our study, POH was found in 2/76 cases (3%). The mean age of patients is 44.0± 9.8 Years. All our patients were females 2/2 (100%) had Intermittent sun exposure. None of our patients 2/2(100%) applied sunscreen lotions or creams. Only 1/2 (50%) patients use traditional indigenous preparations. Family history of disease was seen only in 1/2 (50%). In one patient site of lesion was on face in 1/2 (50%), while in other it was on trunk (50%).

Macular Amyloidosis (MA)

In our study, MA was found in 2/76 cases (3%). The mean age of patients is 41.0± 4.2 Years. All our patients were females 2/2 (100%) had Intermittent sun exposure. None of our patients 2/2 (100%) applied sunscreen lotions or creams or used traditional indigenous preparations. Family history of disease was not seen in any of our patients. In one patient site of lesion was on face in 1/2 (50%), while in other it was on trunk (50%). Colour of lesion in all 2/2 (100%) is dark brown. Dermoscopy patters in all 2/2 (100%) cases is H & S like pattern.[23]

Becker's Nevus (BN), Fixed Drug Eruption (FDE), **Lichen Amyloidosis (LA)**

BN is observed in one patient. In that patient a dark brown hyperpigmentation on shoulder, with a no history in family and intermittent sun exposure, not used traditional indigenous preparations. On dermoscopy Reticulo Globular pattern is observed.

FDE is observed in one male patient of 57 years old, with intermittent sun exposure, not using any sunscreen lotions or used traditional indigenous preparations, with no family history. Location, colour and pattern of lesion is trunk, BI and annular globular pattern respectively.

LA is seen in 59 years old male patient with intermittent sun exposure, not using any sunscreen lotions or used traditional indigenous preparations, with no family history. Location, colour and pattern of lesion is legs, light brown, and H&S pattern respectively.

CONCLUSION

Acquired hypermelanosis is one of the most cosmetically unpleasant complaints that dermatologists face. Multiple aetiologies with diverse clinical outcomes and therapeutic methods complicate care. Identifying the etiology of hypermelanosis via a noninvasive procedure such as dermoscopy simplifies patient management and follow-up. There is a scarcity of published literature on this area, hence further research is needed to characterize the dermoscopic aspects of various clinical entities.

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