IADVL

SIG Dermoscopy

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(July - Dec issue)

PIGMENTAROSCOPY

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Acquired pigmentary disorders result from the abnormal distribution, dysfunction, or destruction of melanocytes. An increase or decrease in melanin content of the epidermis results in hypermelanosis or hypomelanosis, respectively. Rarely, hyperpigmentation may occur due to abnormalities in keratinocyte proliferation. Although histopathology remains the gold standard in diagnosing pigmentary disorders, most of these are generally benign and do not warrant an invasive procedure such as a skin biopsy. Dermoscopy of pigmentary disorders, also known as pigmentaroscopy, has recently emerged as a probable non-invasive substitute to histopathology, which can clinch a diagnosis and minimize and rationalize cases where this is not possible that need confirmation using skin biopsy. Pigmentaroscopic features involve colors, structures, and patterns.

Colors: The location of melanin in the different layers shows different colors on dermoscopy

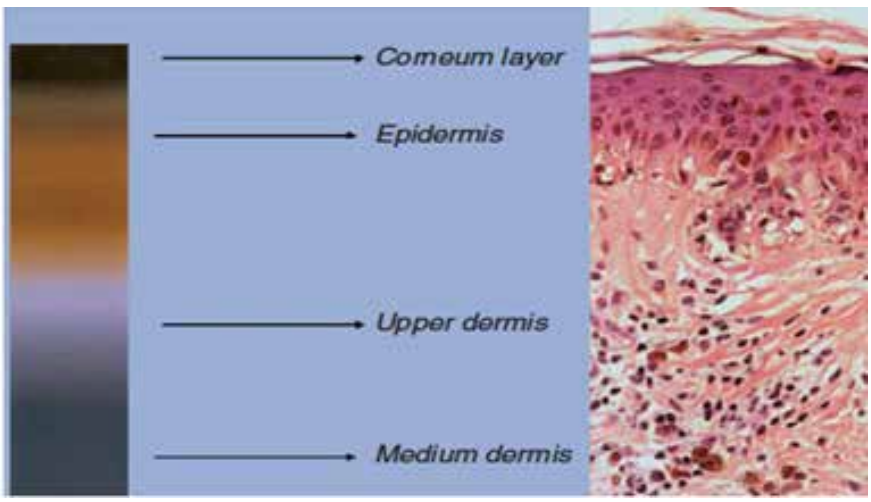

Figure 1: The location of melanin and the corresponding color as observed under dermoscopy.

(Fig. 1). In the stratum corneum, it looks black; in the lower layers of the epidermis, it looks light brown to dark; in the papillary dermis, it looks gray; and in the reticular dermis, it looks blue. Light brown color with an irregular network is observed when melanin is located in the lower layers of the epidermis, while bluish-grey color indicates dermal pigment. The variation in color observed on dermoscopy is due to the Tyndall effect, in which short-wavelength blue light is dispersed and reflected more than long-wavelength light.

Structures: The basic structures are lines, dots, globules, blotches, clods, and streaks that include pseudopod and radial streaming, circle, and structureless areas (Fig. 2).

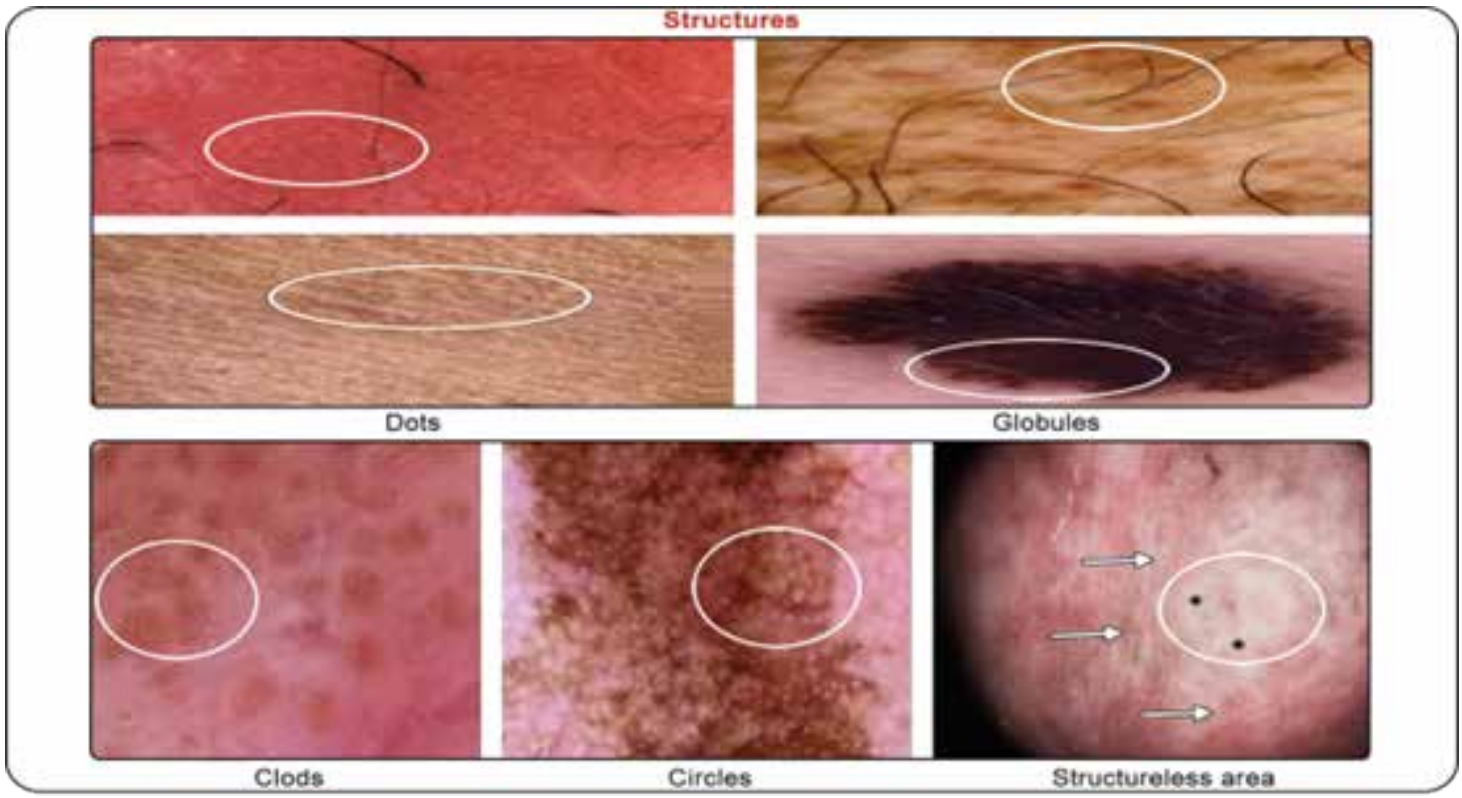

Figure 2: Different dermoscopic structures.

Patterns: It is formed by the repetition of a single basic structure in a particular fashion. Patterns of lines can be reticular, branched, parallel, radial, and curved. The background color, perifollicular and perieccrine involvement are other features that help diagnose (Fig. 3).

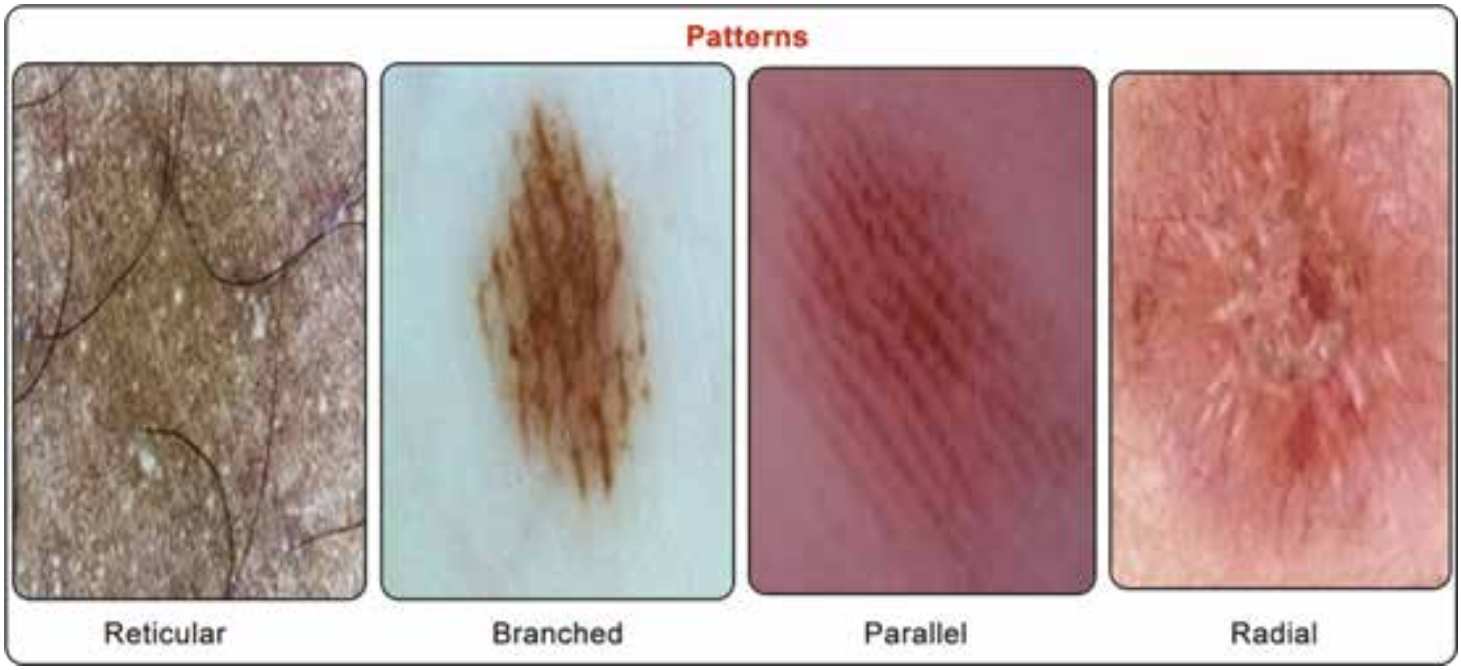

Figure 3: Different dermoscopic patterns.

Dermoscopy of normal skin demonstrates brown lines arranged in a reticular pattern resembling a honeycomb with white or light brown circles between them. This is referred to as a pigment network, which is homogenous in color with a regular and uniform pattern. The brown lines correspond to melanin in the epidermis arranged along rete ridges, while the tips appear white to light brown. This occurs due to a higher concentration of melanin on the slope of rete ridges. A true pigment network is a hallmark of body skin, with minimal variability in the color, thickness, and spacing of the lines and is symmetrically distributed, whereas an atypical pigment network shows variability in color, thickness, spacing and asymmetry. In the reverse network, relatively lighter areas comprise the grid, filled with relatively darker areas. Facial skin demonstrates pseudonetwork constituted by diffuse brown pigmentation interrupted by light brown circles or holes. This pattern is attributed to the distribution of melanin along flat rete ridges of the epidermis, while holes correspond to pilosebaceous and sweat gland openings. The palmoplantar skin has a thick stratum corneum with dermatoglyphics formed by furrows and ridges, and the pigmentation is seen on the parallel furrows of the skin markings.

Hence, dermoscopy can help provide additional clues to identify and improve the yield of biopsy and plays an important role in assessing the severity of the disease and response to therapy in case of pigmentation disorders.

PIGMENTAROSCOPY: WHAT SHOULD A POSTGRADUATE LEARN?

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INTRODUCTION

Pigmentaroscopy is nothing but a dermoscopy of pigmentary disorders. It holds a special place in our setup as disorders of pigmentation forms the bulk of our OPD. Dermoscopy has a role in diagnosis, prognosis, and therapeutic monitoring of patients suffering from pigmentary disorders. In disorders of hyperpigmentation, it helps in the diagnosis of closely mimicking facial melanoses like melasma, lichen planus pigmentosus, pigmented contact dermatitis, pigmentary demarcation lines, and so on. It also helps in prognostication as the dermal pigment is more difficult to manage as compared to the epidermal pigment.[1,2] It can be used for therapeutic monitoring and helps monitor the adverse effect of topical steroids and hydroquinone; it can also be used for therapeutic monitoring during ND: YAG laser treatment.[3]

In hypopigmentary disorders, dermoscopy is useful in diagnosing vitiligo and differentiating it from other mimics like nevus depigmentosus, ash leaf macules and idiopathic guttate hypomelanosis. It is also useful in the diagnosis of pityriasis alba and leprosy. Various dermoscopic features help in determining disease activity in vitiligo.[4]

How to perform dermoscopy in pigmentary disorders?

1. Dermoscope should be adequately charged.

2. A polarised view provides a better view of pigmentary conditions, and lesions should always be examined in polarised light

3. Dermoscopy should be performed in multiple areas and in the most representative area for better diagnosis.

Benefits of dermoscopy in pigmentary disorders

1. Dermoscopy is a non-invasive method and is especially useful in cosmetically sensitive areas like the face.

2. The patient incurs no extra cost, and it gives a sense of complete examination to the patient.

3. Images can be captured in a camera and monitoring can be done using dermoscopy images

4. An adverse effect like steroid damage can be detected much earlier with dermoscopy and can prevent irreversible damage to the skin.

5. A dermoscopy-guided biopsy may help in increasing the yield of the biopsy.

Points to remember:

1. It should be the endeavor of all postgraduate residents to buy a good quality dermoscope and be familiar with its functioning as soon as possible.

2. The scope should be used for all cases to get used to pattern identification.

3. Dermoscopic structures should be identified and described as per current guidelines of the International dermoscopy society.

4. Dermoscopic features are a reflection of histopathology and a lot can be learned by correlating dermoscopy with histopathology.

5. Share dermoscopic images and discuss possible differential diagnoses for better learning.

6. It may be difficult to diagnose a disease only using dermoscopy. Clinical correlation with dermoscopy is a must and one should understand the limitations of dermoscopy in pigmentary disorders.

Conclusion

Dermoscopy is a good tool for the assessment and management of pigmentary disorders. As with any other tool, the usefulness depends on the person who wields this tool. Pigmentary disorder dermoscopy is a developing branch and is helpful in many conditions. For learning pigmentary disorders, dermoscopy can help postgraduate residents navigate these difficult disorders with relative ease.

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DERMOSCOPIC TERMS IN HYPERPIGMENTARY DISORDERS: DO WE NEED TO LOOK CLOSER?

DR. PRIYADARSHINI SAHU

Dermoscopy is a very helpful tool for diagnosing pigmentary disorders, both in hypopigmentary and hyperpigmentary conditions. Most conditions are difficult to differentiate clinically, and biopsy is not feasible in all patients. Dermoscopy of pigmentary disorders is also known as "Pigmentaroscopy" and is an exciting area of dermoscopy. Usually, dermoscopic findings represent underlying histopathological features.

In pigmentary disorders, conditions may have overlapping histopathological features and they may vary as per the stage of the disease. So due to overlapping histopathology, similar dermoscopic terms can be used in various pigmentary disorders. It is very crucial to understand the basic histology of various dermoscopic terms and correlate them with pigmentary disorders. Hence, we need to look closely at the dermoscopic features and corelate them with the histology to reach the diagnosis. Dermoscopy has certain advantages as it can be done on the entire involved area, repeat dermoscopy during disease evolution and treatment to change or confirm the diagnosis. Thus, pigmentaroscopy is a valuable tool in diagnosing, prognosis, and monitoring treatment efficacy.

There are various dermoscopic terms in hyperpigmentary disorders.

- Reticular pigment pattern: The pigment network consists of a grid of intersecting pigmented lines forming a "honeycomb pattern" and hypopigmented "halos". The lines

of the network reflect melanin along the rete ridges, and the holes in between the lines correspond to the tips of dermal papillae and the suprapapillary region over it. The width of rete ridges reflects the width of the network lines. The skin over the trunk and extremities shows this pattern.

- Pseudo-reticular pattern: The face shows a pseudo-reticular pattern due to interruption by non-pigmented follicular and adnexal openings.

Both these pigment patterns can be seen in various pigmentary disorders. The typical reticular pigment network is seen in nevi and an atypical network is associated with melanoma and dysplastic nevi. The pseudoreticular pattern can be seen in pigmented lesions of the face, such as nevi on the face or melasma. There is an exacerbation of the pseudo-reticular pattern in melasma. This pigmentation in melasma spares the appendageal openings, which are obliterated in exogenous ochronosis.

- Structureless (homogenous) areas are defined as areas with a size that is at least 10% of the lesion's surface area and devoid of any dermoscopic structures. It can be pigmented or non-pigmented.
- Dots - brown, black, or bluish-grey spherical structures less than 0.1 mm in diameter; it represents aggregates of melanin granules or melanocytes. The black dot represents pigment in the upper epidermis or stratum corneum. The Brown dot represents pigment at DEJ or lower epidermis. Gray-blue dots represent pigment in the papillary dermis.
- Globules - Brown, black, or bluish-grey spherical or ovoid structures more than 0.1 mm in diameter

Brown dots on the network correspond to melanocytic nests at the tip of rete ridges. Thus, all dots and globules represent moderate to severe pigment incontinence on HPE. Dots and globules can follow multiple distribution patterns such as "hem-like," "arcuate," "incomplete reticular," and "complete reticular," corresponding to various stages of skin pigmentary network. These different patterns represent varying degrees of pigment incontinence, such as severe incontinence show incomplete and complete reticular network and mild cases to a hem-like and arcuate pattern. Black dots correspond to aggregates of melanocytes or melanin granules in the upper epidermis or stratum corneum. Globules are nests of melanocytes in the dermis. These structures can be seen in dermoscopy of LPP, pigmented contact dermatitis, and erythema

dyschromicum perstans (EDP). Although these structures can be seen in any of three pigmentary disorders, they can be differentiated depending on background pigmentation, reticular pattern, the color of pigment deposition, and specific clue. The difference is given in Table 1. So, we must look at these dermoscopic changes carefully to differentiate between the three pigmentary disorders.

The dermoscopic grades of disease severity and total disease duration have a significant correlation with dermal melanophage density. In a cohort study by Vinay et al., acquired dermal macular hyperpigmentation (ADMH) with LPP, EDP, Riehl's melanosis/ Pigment contact dermatitis, idiopathic macular eruptive pigmentation, and other acquired hyperpigmentary disorders have correlated their dermoscopic features with histopathological features highlighting association with disease severity and duration. Four dermoscopic grades of disease severity have been identified. [1]

Grade 1: It is the early stage with focal vacuolization of basal layer and mild pigment incontinence, which corresponds to only pigment dots on dermoscopy. In this stage, there are predominant dots with no specific pattern.

Grade 2: Predominantly dots with occasional globules, arranged as broken lines and semi-arcuate structures appearing as Chinese letters. Eccrine openings are distinctly spared; however, pigment structures are aggregated around and rim the spared eccrine openings. In this, there is moderate pigment incontinence.

Grade 3: Dots and globules with occasional blotches arranged in a reticulate pattern. Areas of normal-looking skin were maintained. On histopathology, severe pigment incontinence is seen.

Grade 4: Diffuse, dense involvement with dots, globules, and blotches obliterating the normal pigment network. Even in advanced stages, eccrine openings are distinctly spared and give a starry sky pattern. Extensive pigment incontinence is seen on histology.

- Peppering or granularity: It is defined as the accumulation of multiple very small (< 0.1 mm), nondescript, blue-grey dots. Histopathologically, granularity correlates with melanin in the superficial dermis, either as fine melanin particles in melanophages or extracellular "dust-like" particles.

- Hub and stroke pattern: a brown or white center surrounded by radiating hyperpigmented streaks. It is seen in cutaneous amyloidosis. The central hub is replaced by a central scar-like white area encircled by thick brown-to-black pigmentation.
- Curvilinear and worm-like structures: It is seen in exogenous ochronosis. It is due to ochre-colored banana-shaped fibers in the papillary dermis.

Specific clues are usually considered a feature that is strongly associated with only one disease. But there are few dermoscopic features which can be present in more than one disease. Thus, these dermoscopic terms must be look closer to identify the specific pathology according to its appearance.

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DERMOSCOPIC-PATHOLOGIC CORRELATION

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Dermoscopic examination during clinical practice is gradually gaining popularity. Of the various reasons, the direct reflection of the underlying pathological features is one of the critical reasons for its increasing stardom. Dermoscopy does so by unveiling different colors. The color under the dermoscope guides the clinician to correlate it with the corresponding pathological feature responsible for the same color or combination of colors. The colors result from the chromophores in the epidermis and, or dermis.

In hyperpigmentation disorders, melanin is predominant in producing different pigment structures. In addition, in disorders of hypopigmentation, the absence of melanin facilitates the other chromophores to display their color.

Dermoscopic structure and their corresponding pathologic features:

a. The pigment network results from the interconnecting pigmented lines surrounding the hypopigmented hole arranged in a grid-like pattern. The melanin in the vertical arms of rete ridges results in pigmented lines, and the holes correspond to the hypopigmented horizontal width between the adjacent rete ridges (Fig. 1 and 2).[1]

b. Pseudonetwork is the consequence of the location of the dermatosis on the face. The rich adnexal openings interrupted the structureless brown area. The follicular, eccrine, or sebaceous gland openings correspond to the holes and the increased epidermal melanin to the structureless brown area.[1]

c. Brown, brown-gray, gray, blue-gray, or blue structureless areas are due to the diffuse increase of melanin in the epidermis and, or dermis.[1,2]

d. Homogenous white area results correspond to the epidermal keratin and/or dermal collagen and result from partial or complete loss of melanin (Fig. 3 and 4).

e. Brown, brown-gray, gray or blue-gray, blue dots, and globules correlate to the circumscribed collection of melanin anywhere from the stratum corneum to the upper dermis. [3]

f. The annular granular pattern occurs due to the perifollicular distribution of dots and structureless areas and involves an adnexal opening. It is observed in lichen planus pigmentosus.

g. White shiny structures are the properties of polarized light. They possibly correlate with compacting hyperkeratosis. [4]

Detailed knowledge regarding dermoscopic-pathological correlation is essential for the optimal use of dermoscopy. Besides guiding the diagnosis, dermoscopy can also act as a tool to guide dermatologists in choosing the most representative area for biopsy preoperatively and post-operatively.

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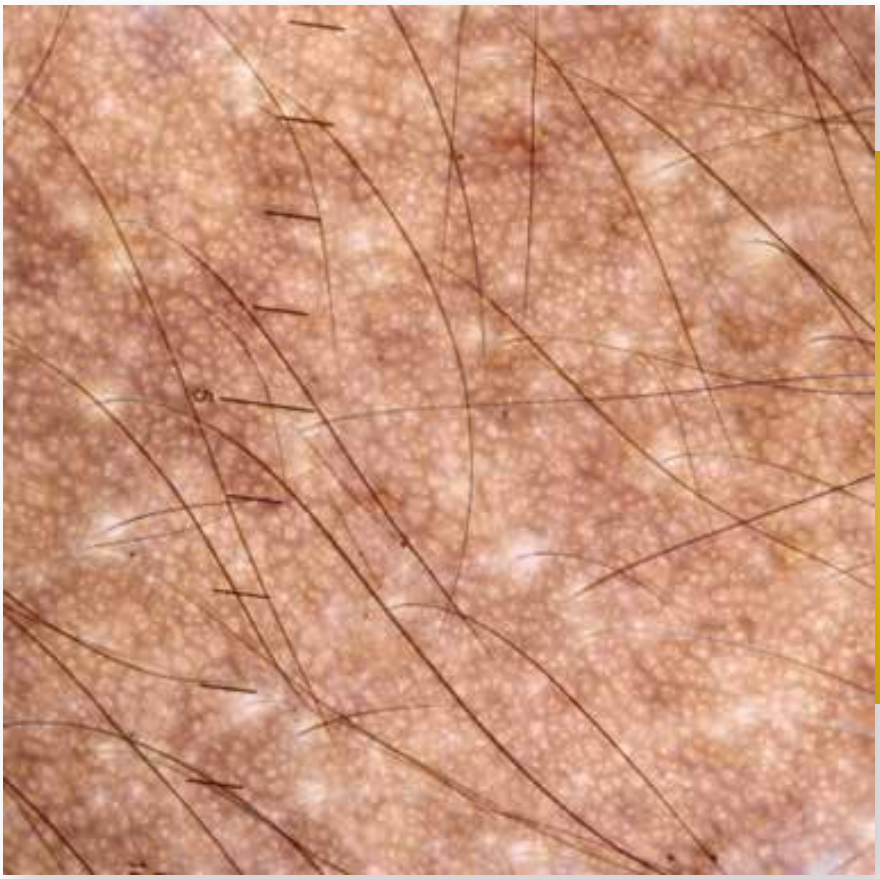

Figure 1: Pigment network: Dermoscopy showing pigment network in a case of Becker's nevus (Polarized, DermLite DL4, 10x).

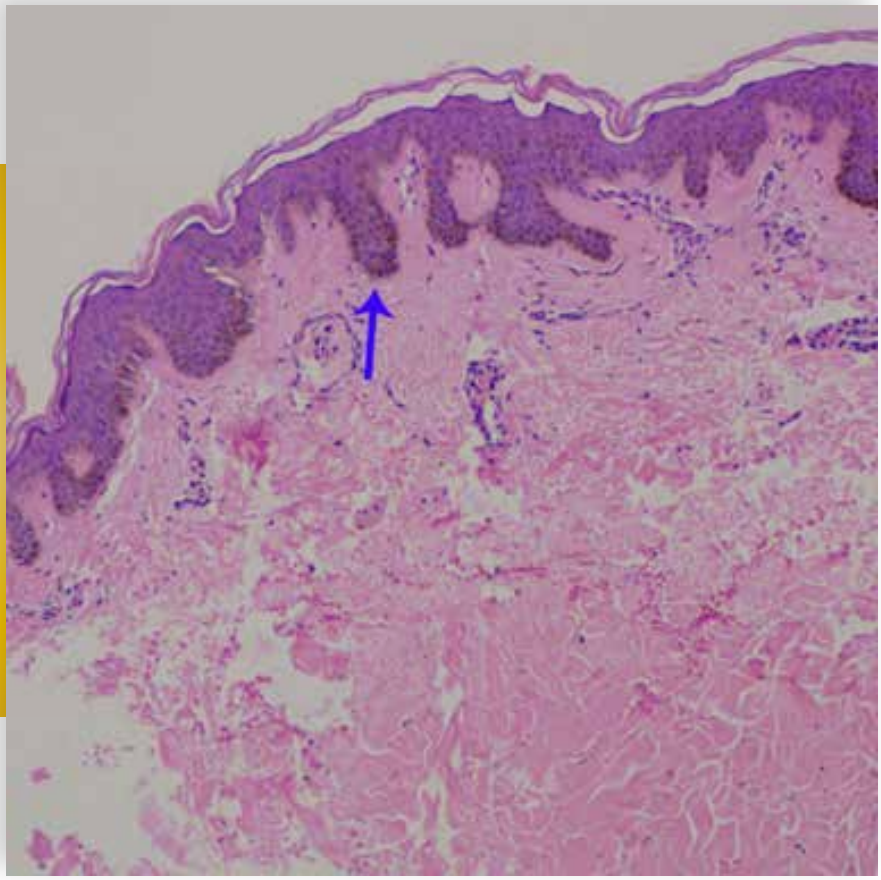

Figure 2: The pigmented keratinocytes over the rete ridges (arrow) correspond to the brown lines and the dermal papillae with suprapapillary plate to the hypopigmented holes (H & E, X 100).

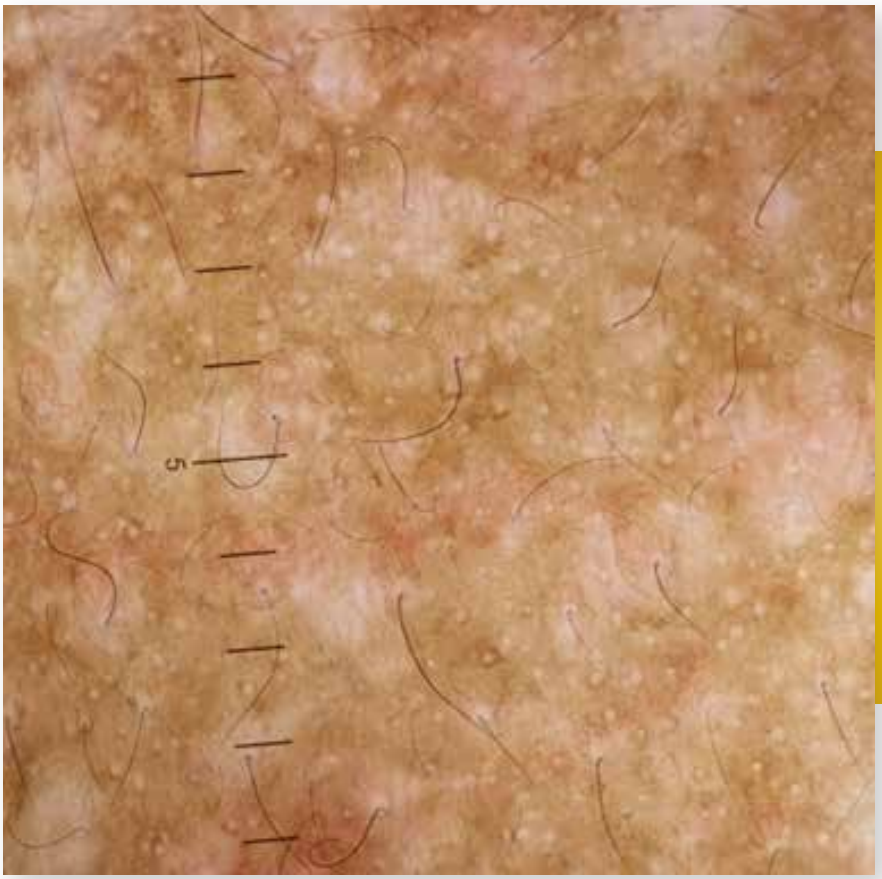

Figure 3: Pseudonetwork: Pseudonetwork in a case of melasma over the face (Polarized, DermLite DL4, 10x).

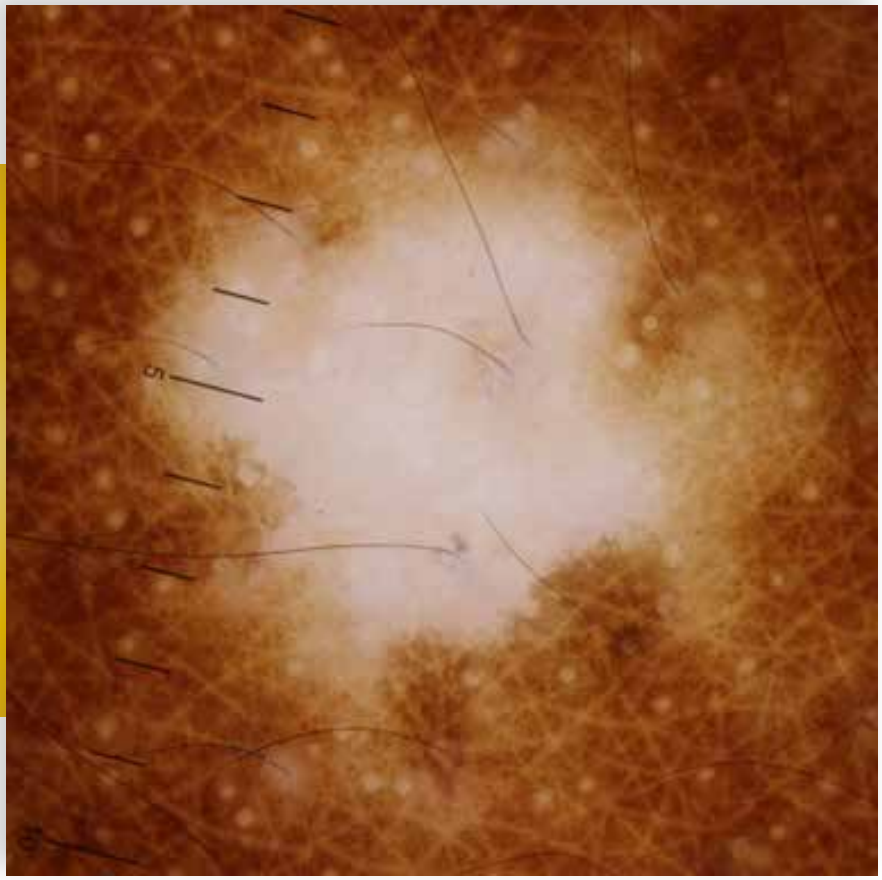

Figure 4: Structureless area, white in a case of vitiligo (Polarized, Dermlite DL4, 10x).

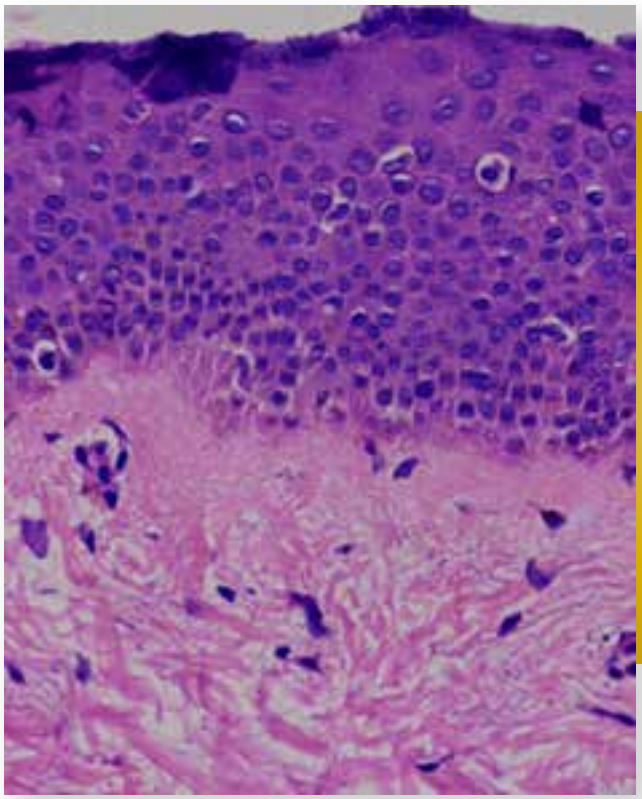

Figure 5: Histology showing complete loss of melanin (arrow) (H & E, 400x).

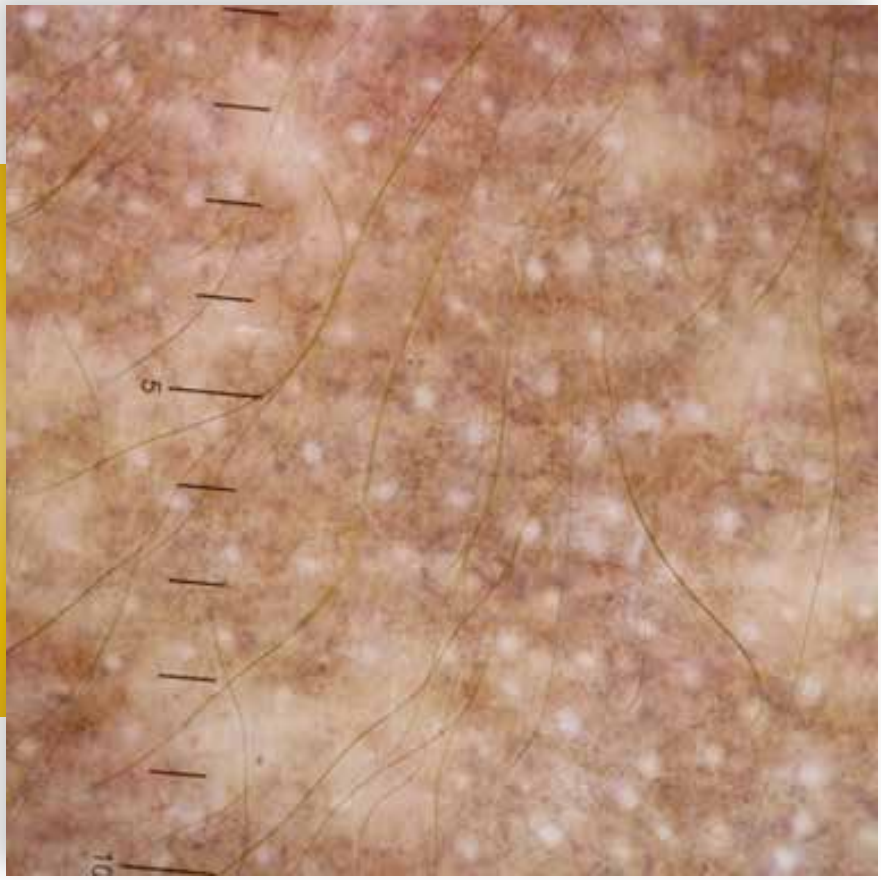

Figure 6: Dots, blue-gray and brown-gray in a case of lichen planus pigmentosus (Polarized, Heine Delta 20T, 10x).

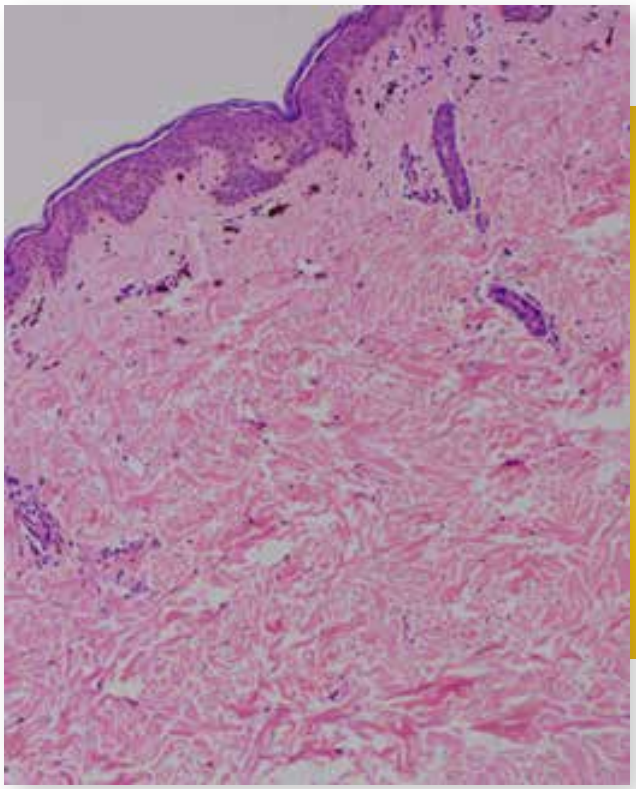

Figure 7: The blue-gray dots correspond to the dermal melanophages (H & E, X100).

HYPERPIGMENTATION OF THE FOREHEAD: ROLE OF DERMOSCOPY IN DIFFERENTIATING BETWEEN ACANTHOSIS NIGRICANS, PIGMENTED CONTACT DERMATITIS AND LICHEN PLANUS PIGMENTOSUS

DR. SPANDANA HEGDE

Hyperpigmentation of the forehead is a commonly encountered scenario in routine dermatological practice.The common causes of forehead hyperpigmentation include acanthosis nigricans, pigmented contact dermatitis, melasma, lichen planus pigmentosus, maturational pigmentation and seborrheic melanosis. This section discusses the salient dermoscopic features of acanthosis nigricans, pigmented contact dermatitis, and lichen planus pigmentosus, which may aid in arriving at a diagnosis, thus facilitating appropriate treatment.

Acanthosis nigricans:

Facial acanthosis nigricans (AN) presents as brown to black macular pigmentation with ill-defined margins and textural changes ranging from mild roughness to obvious velvety appearance.[1] Dermoscopy of AN usually shows linear crista cutis and sulcus cutis with scattered black or dark brown dots and globules (Figure 1). The background colour alternates between darker brown or greyish-brown in cristae cutis and white (hypopigmented) in sulci cutis.[2] Pigmented dots and globules are specific clues for AN. Cristae and sulci are better visualized in non-polarized mode, and pigmented dots and globules are better appreciated in polarized mode. No follicular or vascular or scales patterns are seen.[3]

In histopathological correlation, linear crista cutis represents uplifted and pigmented epidermis by papillomatous dermal projections, whereas sulcus cutis represents equally pigmented surrounding epidermis. The white colour of sulci cutis is due to the basket weave stratum corneum filled in the valley of the downwardly progressed epidermis. Darker brown or black dots probably correspond to heavy melanization in the epidermis.[3]

Pigmented contact dermatitis:

Pigmented contact dermatitis (PCD), also known as Riehl's melanosis, presents as bilaterally symmetrical, greyish-purplish-brown reticulated hyperpigmentation on the face and neck.[4] Dermoscopy of PCD shows brown to grey coloured dots and bluish-grey granules, pseudo-network pattern, telangiectatic vessels, flour-like scales, follicular keratotic plugging with a perifollicular whitish halo on an erythematous background (Figure 2).[5] The globules are finer and smaller in PCD as compared to lichen planus pigmentosus. Superimposition of brown globules is characteristic of PCD.[3] The bluish-grey granules indicate the presence of pigment in the deep dermis.[6]

It is hypothesized that low-level persistent contact with chemicals leads to cytolytic reaction at the basement membrane resulting in pigment incontinence.[6] The pseudo network is due to homogenous pigmentation that is interrupted by the non-pigmented follicular openings. Perifollicular keratotic plugs (corresponding to follicular hyperkeratosis) with perifollicular whitish halo (corresponding to perifollicular fibrosis) are reportedly more prominent over face, due to the higher density of hair follicles over the face.[4] The perifollicular white halo may be difficult to appreciate in skin of colour due to dense melanin.[3]

Lichen planus pigmentosus:

Lichen planus pigmentosus (LPP), a variant of lichen planus, presents as hyperpigmented macules in the sun-exposed areas and flexures. It is characterized by the presence of brown (epidermal pigmentation) and slate-grey to blue (representing dermal melanophages) dots and globules.[7] The dots and globules are intensely coloured and densely arranged in diffuse, dotted, annular, hem-like, arcuate, speckled, perifollicular, peri-eccrine and speckled patterns.[3,7,8,9] Though typical of LPP, hem-like pattern is not commonly observed in facial lesions.[3] Perifollicular and peri-eccrine

distribution of globules (representing sparing the white dots of follicular and eccrine openings) is the most commonly observed pattern.[3] (Figure 3) The reticular or pseudo-reticular pattern is noted due to the annular and arcuate arrangement of globules. The pattern of arrangement of globules is dependent on the predominant changes in a given lesion. Characteristics of pigment globules are explained on the basis of very active vacuolar dermatitis, heavy melanin incontinence, focal atrophy of melanized epidermis and widespread follicular involvement.[3] The background colour is brownish with a bluish-grey hue.8 Wickham's striae and vascular structures are absent in LPP.[7]

The various dermoscopic features of acanthosis nigricans, pigmented contact dermatitis and lichen planus pigmentosus is summarised in Table 1.

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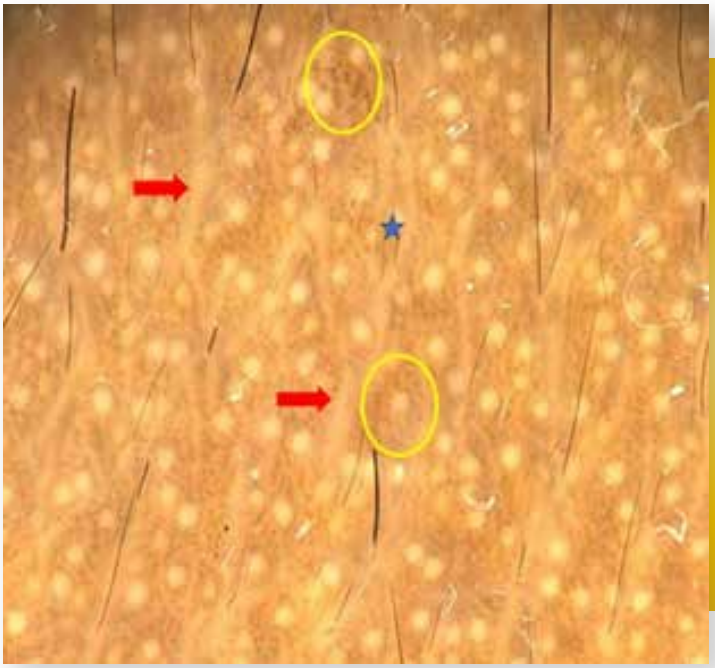

Figure 1: Dermoscopy of acanthosis nigricans shows crista cutis (blue star), sulcus cutis (red arrows), dark brown dots in crista cutis (yellow circles)

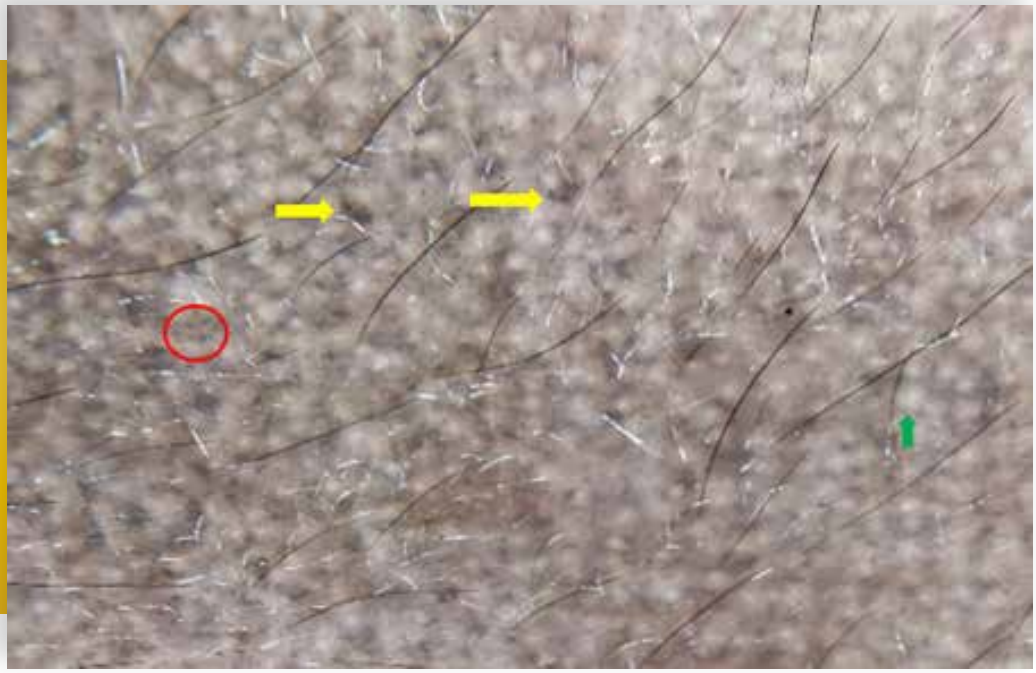

Figure 2: Dermoscopy of pigmented contact dermatitis shows pseudo-network pattern, fine brownish-grey dots (red circle) and bluish-grey globules (yellow arrows) and perifollicular whitish halo (green arrow)

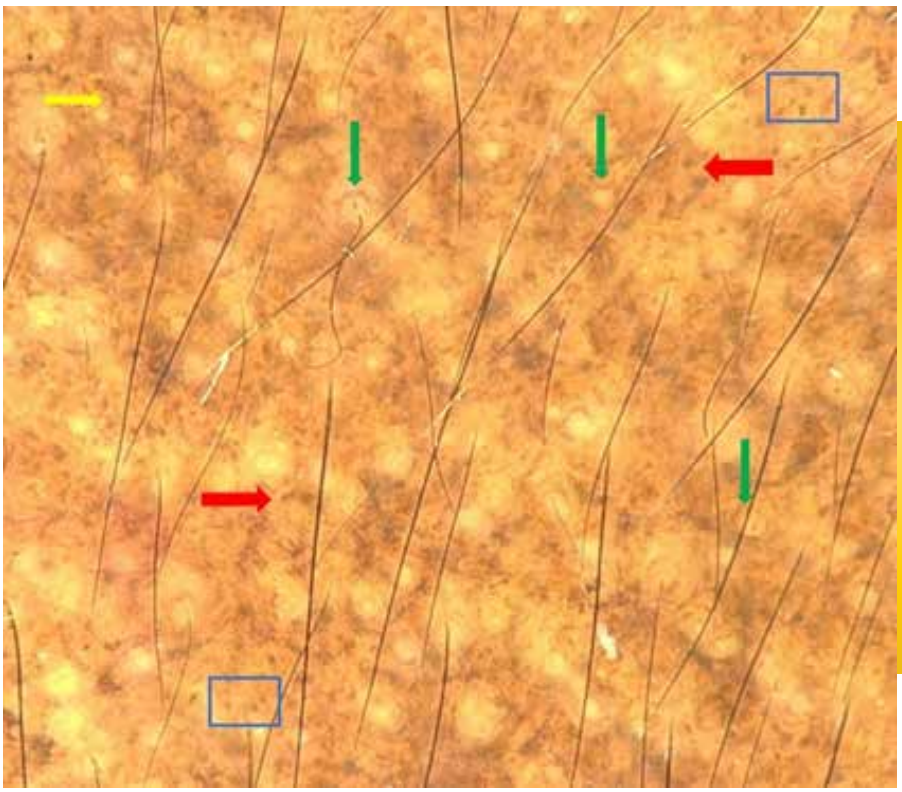

Figure 3: Dermoscopy of Lichen planus pigmentosus with brown background, brown dots (blue squares), slate grey- bluish dots and globules (red arrows) showing arcuate pattern (yellow arrow) with peri-follicular and peri-eccrine pigment deposition (green arrows)

Table 1: Dermoscopic features of acanthosis nigricans, pigmented contact dermatitis and lichen planus pigmentosus

Characteristics	Acanthosis nigricans	Pigmented contact dermatitis	Lichen planus pigmentosus
Background colour	Dark brown/ greyish brown- cristae cutis	Erythema	Brown to bluish-grey hue
Reticular network	White- sulcus cutis Absent	Accentuated pseudo network pattern	Uniform/ non - uniform accentuation
Dots, globules/ Pigment deposition	Dark brown/ Scattered	Brown to bluish-grey/ Uniform, fine and small in early lesions while similar to LPP in older lesions	Brown and slate grey-blue/Irregular, large, intensely coloured, densely arranged with perifollicular and peri-eccrine involvement
Follicles	Not involved	Follicular keratotic plugging with perifollicular whitish halo	Not involved
Vessels	Not seen Absent	Telangiectatic vessels	Not seen Absent
Scales	Linear cristae cutis and sulcus cutis	Flour like scales	
Special features		Superimposition of brown globules	

VITILIGO: ROLE OF DERMOSCOPY IN DIAGNOSIS PROGNOSIS AND MANAGEMENT

DR. DEBJIT KAR

Understanding Dermatology, in addition to all theoretical knowledge and practical experience, involves training our eyes to various shades of the same color with subtle differences, just like an Asian paint shade card (pun intended). This is best exemplified in the relatively new science of Dermoscopy. But it definitely goes a long way to differentiate the differentials in hitherto difficult to differentiate various closely resembling hypo pigmentary diseases clinically.

However small, any white patch on the skin is always a matter of grave concern in people of skin color. An accurate diagnosis on the part of a dermatologist is equally challenging, especially in the case of early lesions or a new patch of evolving vitiligo.

Important Dermoscopic clues guide us regarding the diagnosis, stability (prognosis and identifying lesions amenable to surgery), and response to medical treatment.

Dermoscopy:

White or milky white background color is the first thing that greets us as we scope a vitiligo patch. The early patches or evolving lesions present with a white glow[1], due to an absent pigmentary network as a result of the loss of melanocytes in the lesion.

The reticulate pigmentary pattern of normal skin is altered in the lesions of vitiligo[2].

A reverse pigmentary network is the reversal of a normal reticular pigment network,

wherein white lines segregate hyperpigmentary areas in a net-like fashion. This is exactly opposite to the normal network pattern and it is noted in evolving lesions of vitiligo[1].

Though there are different patterns or features of vitiligo lesions that cannot be singly attributed to stability or instability, the predominance of some over others and the combined conclusions of all the features do help us to decide on the stability factor, which otherwise is intriguing clinically. Fairly uniform perilesional or marginal hyperpigmentation[2] (Fig. 1) is the most common finding in stable vitiligo, in addition to perifollicular pigmentation and reticulate pigmentation (Fig. 1).[3] They also provide a very vital clue regarding the feasibility of going for a surgical treatment, which may not always be possible by just assessing the lesions clinically. Perifollicular pigmentation is most commonly seen in unstable lesions[2]. Other patterns seen in unstable are trichrome pattern, comet tail appearance (Fig. 2) microkoebners phenomenon and tapioca sago appearance or polka dot appearance [Figure3]. The persistence of these markers may also indicate a poor response to treatment and a need to change the treatment.

Patients on treatment also most commonly presented with reticulate pigmentation, and marginal and perifollicular hyperpigmentation. Additional findings in patients on treatment are erythema, telangiectasia (Fig. 4) and atrophy[3,4] and are considered good prognostic signs. Leucotrichia (Fig.1) is a very important clinical and dermoscopic marker of vitiligo, a sign of depleting melanocyte reservoir in stable and unstable diseases. It can be seen more accurately on dermoscopy at an early stage and may indicate poor response to medical treatment. Patients on treatment additionally show erythema and telangiectasia (Fig. 4).[3]

The absence of scaling and vessels are other features that differentiate it from other hypo pigmentary disorders like idiopathic guttate hypomelanosis, Pityriasis alba, and pityriasis versicolor. Hence, dermoscopy goes a long way in making an easier and earlier diagnosis, assessing the stability, prognosis, response to treatment and deciding about changing the course of treatment. It has certainly brought about a paradigm shift in how we approach a vitiligo case.

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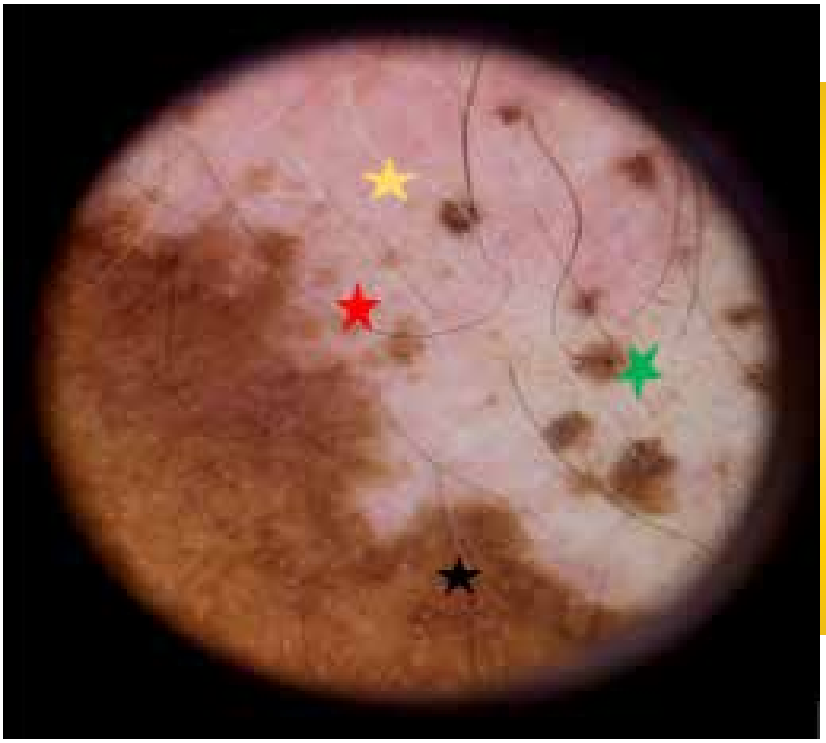

Figure 1: Marginal hyperpigmentation (black star), reappearing /retained reticular pigmentation (blue star), leucotrichia (yellow star), and perifollicular pigmentation (green star).

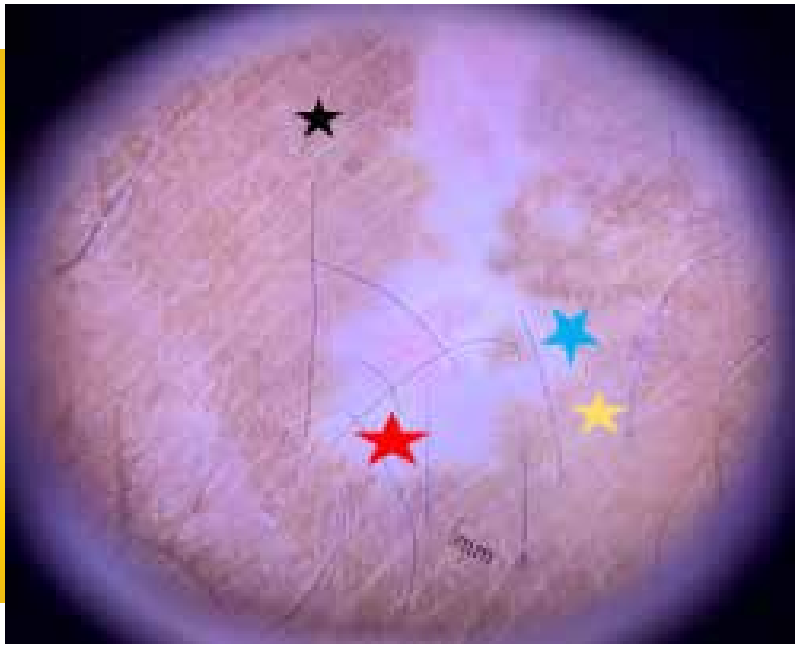

Figure 2: Unstable lesion: Absence of pigmentary network (red star) with a white glow, pseudopod (black star), which indicates gradually progressive/spreading lesion, perifollicular patchy pigmentation (blue star), and absence of perilesional hyperpigmentation (yellow star).

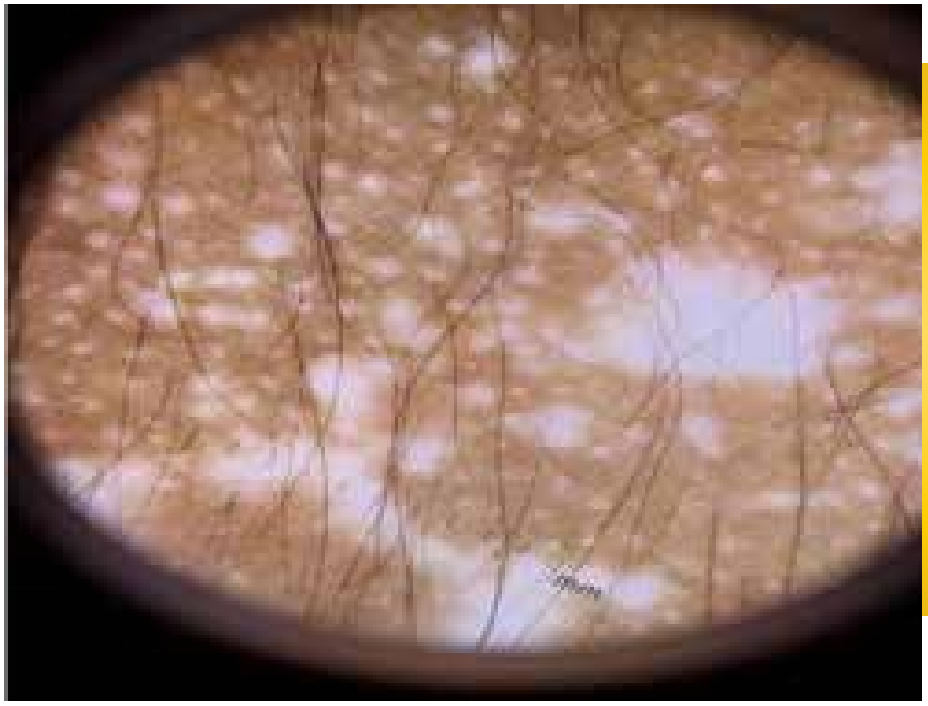

Figure 3: Tapioca sago appearance or polka dot appearance.

Figure 4: Erythema (red star) and telangiectasia (black star) in a patient under treatment with an excimer laser.

CAN DERMOSCOPY DIFFERENTIATE BETWEEN PITYRIASIS ALBA, PITYRIASIS VERSICOLOR AND POLYMORPHOUS LIGHT ERUPTION ON THE FACE?

DR. FEROZE KALIYADAN

Hypopigmented macules over the face can often be difficult to diagnose conclusively by clinical examination alone. Three common conditions which can present as hypopigmented macules over the face, mainly in children, are pityriasis alba, pityriasis versicolor and polymorphous light eruption (PLE). A few points in the history, clinical examination and bedside investigations can help in the diagnosis to a certain extent (history of UV light as a trigger and presence of lesions on other sun exposure sites for polymorphous light eruption, presence of other typical lesions on the trunk, Wood's lamp examination and potassium hydroxide smear for pityriasis versicolor, a history of atopy and other features associated with atopic dermatitis for pityriasis alba). However, in many cases, especially when the patient presents with lesions restricted to the face, these lesions can lead to a diagnostic dilemma.

So, do we have sufficient evidence to say that dermoscopy can help differentiate these three conditions? As of now, there are very few studies available in the literature. A study by Ankad et al. covered pityriasis alba, PLE and vitiligo (total 60 patients, of which 30 were diagnosed with pityriasis alba and 20 with PLE, and the rest 10 with vitiligo). The small sample size, the study restricted to skin-type IV and V, and the fact that the diagnosis was primarily clinical were the limitations of the study. Comparing pityriasis alba and PLE - both showed white structureless areas as a common feature. Findings

seen specifically in patients of PLE alone included clustered red dots, and yellow clods (corresponding to sero-crusts). Coarser scales were more likely to point towards a diagnosis of PLE. Patterns associated with pityriasis alba, other than the white areas, included- fine white scales, ill-defined borders, and faint pigment network.[1]

Another study of hypopigmented macular disorders (not restricted to face), was presented by Al-Refu et al.; of a total of 108 patients, there were 16 patients each of pityriasis versicolor and pityriasis alba. In this study too, the commonest pattern described for pityriasis alba, besides the white areas, was ill-defined borders and fine scales. A point of differentiation from hypopigmented pityriasis versicolor mentioned was that in pityriasis versicolor, the borders tend to be more defined and the scales tend to be concentrated over the skin creases.[2] The limited sample of cases of pityriasis alba and pityriasis versicolor in this study was the main limitation. Skin type details and histopathological correlation were not clearly mentioned.

A study of the dermoscopy of pityriasis versicolor, by Kaur et al. included 24 patients (out of a total of 30 patients) with exclusively hypopigmented pityriasis versicolor. Other than the decreased reticular pigmentation, scaling mainly along the skin creases, a contrast halo (ring of hyperpigmentation around the primary lesion) , folliculocentricity and hypopigmentation of the hair follicle (attributed to the Malassezia invasion) were seen. However, it was not mentioned specifically if there was a difference in these patterns based on the site (no specific findings for face mentioned). The small sample size, lack of culture/ histopathology confirmation and the lack of a comparator group were the other limitations of this study.[3] A study by Mathur et al. of 178 case of pityriasis versicolor, of which 164 were hypopigmented pityriasis versicolor, highlighted 'non-uniform' pigmentation as a common feature. Patchy scaling, inconspicuous ridges/ furrows, and non-specific vascular patterns were other findings. [4]

Dermoscopy, therefore can be a useful tool in the diagnosis of pityriasis alba, pityriasis versicolor and PLE. Evidence at present seems to be most ample for pityriasis versicolor - loss of pigment network, patchy pigmentation, scaling more prominent over skin creases and perilesional contrast pigmentation. The presence of coarse scales, yellow clods and dotted vessels would favor PLE. The most non-specific changes appear to be for pityriasis alba. It must be remembered that the patterns in these three conditions would also depend on the stage and treatment status. With the available evidence, it would be difficult to state that dermoscopy can help to differentiate

between the three conditions conclusively. More studies with larger sample sizes, covering all skin types, and ideally histopathological confirmation/correlation are warranted.

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Figure 1: Pityriasis versicolor- Structureless white area and patchy scales.

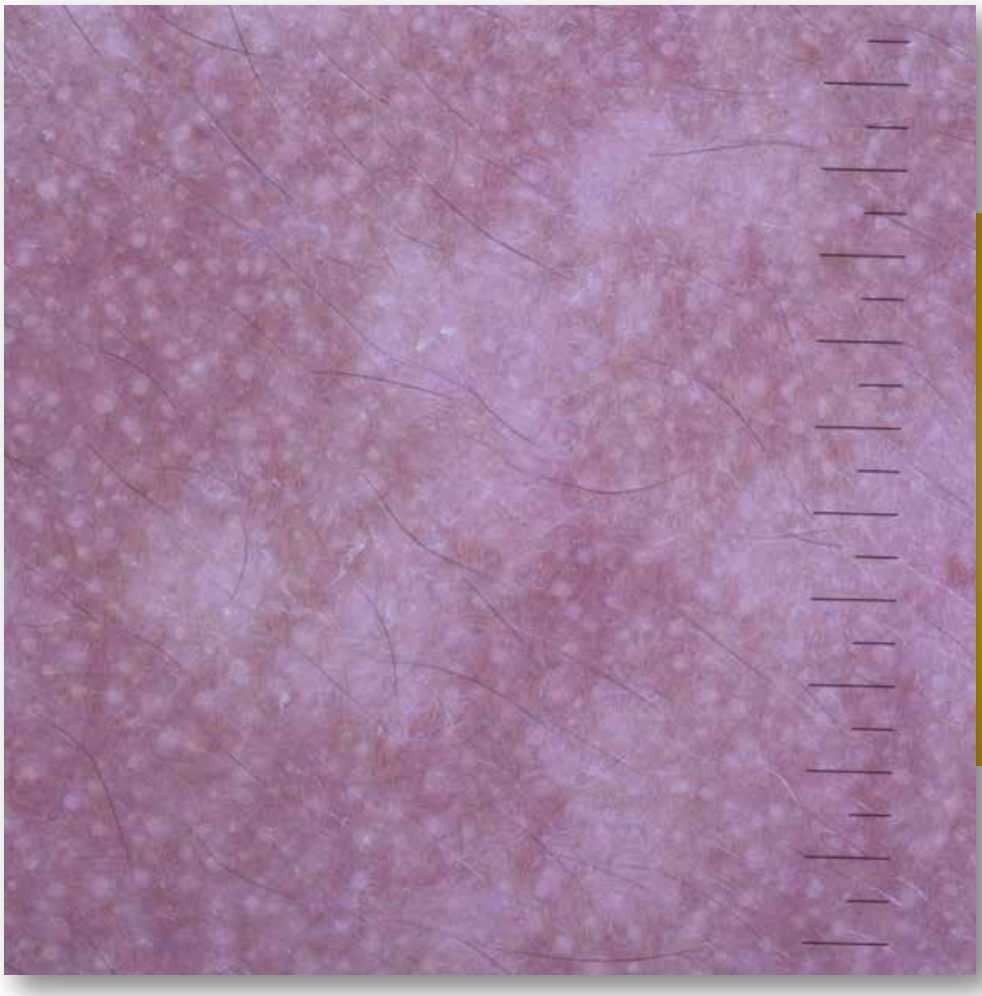

Figure 2: Pityriasis alba- Structureless white areas, fine scales, and faint pigment network.

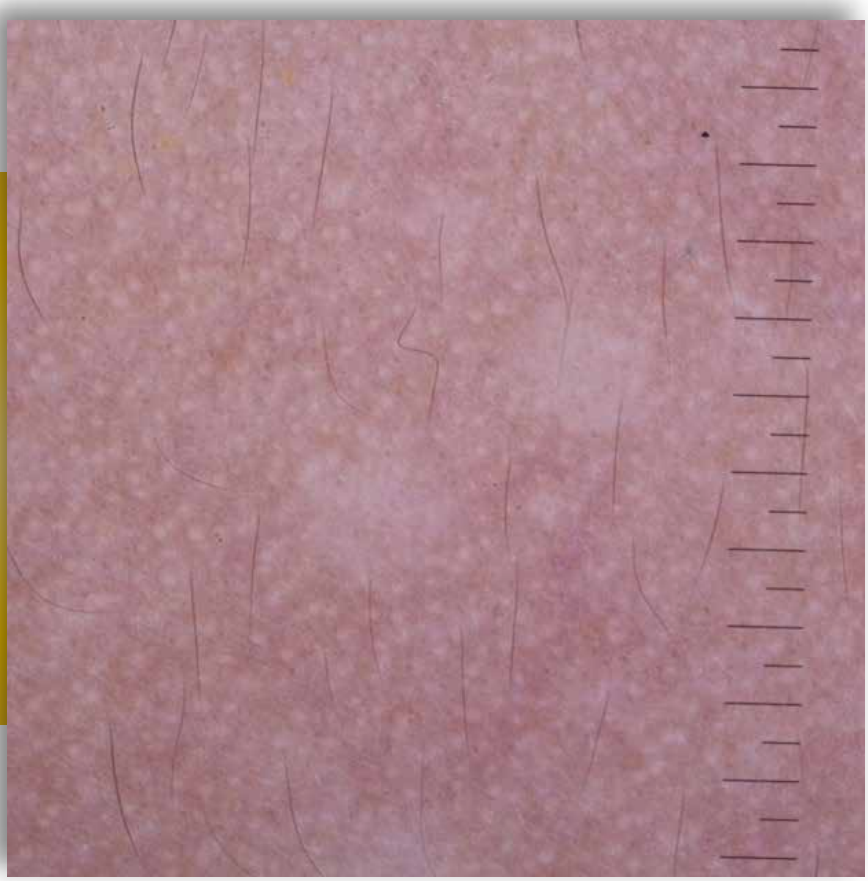

Figure 3: Polymorphous light eruption- Coarser scales, and serocrusts.

DERMOSCOPIC DIFFERENCE BETWEEN CONFLUENT RETICULATED PAPILLOMATOSIS, TERRA FIRMA-FORME DERMATOSIS AND DERMATITIS NEGLECTA

DR. B. S. ANKAD

Introduction: Hyperpigmentary lesions, especially on the visible sites, cause a tremendous psychosocial impact on a patient's life. Apart from common dermatoses which manifest with hyperpigmentation, relatively uncommon conditions do exist. Confluent reticulated papillomatosis (CRP), terra firma-forme dermatosis (TFFD) and dermatitis neglecta (DN) fall in the latter category. Clinically, these conditions look alike, creating a diagnostic challenge for the treating physician.

CRP is typified by hyperpigmented and hyperkeratotic skin lesions. Classically, the upper trunk and neck and inframammary area are involved. It shows keratotic macules and papules with adherent scales that persist for a long time (Fig 1). [1] Dermoscopy of CRP demonstrates fissures and ridges, also known as sulci and gyri, giving a cerebriform pattern. The former look brownish structure and the latter appears as a hypopigmented area giving alternative brown and white lines. White scaling is also located in the furrows and perifollicular areas. Brown pigment globules on the ridges are arranged in a cobblestone pattern. Broken hairs, V-like hairs, and reduced hair density are the few hair changes that are also found (Fig. 2).[1, 2]

TFFD presents dirty-looking discoloration of the skin that can be removed with gentle rubbing of alcohol. Lesions are asymptomatic and characterized by brownish, dirt-like

patches or plaques situated over the trunk and upper back (Figure 3). [3] Dermoscopic features include large polygonal plate-like brown scales arranged in a regular 'mosaic pattern' (Figure 4). The alcohol swab test removes the scales. [3, 4]

DN is due to amassing sebum, sweat, corneocytes and bacteria, resulting in compact adherent crusts of dirt. Lack of wash and cleaning is attributed to the condition. Localized pigmented patch or plaque with adherent scales is the classical presentation (Fig. 5). [5] Dermoscopic features are typified by irregularly distributed cornflake-like dark brown scales. Everted edges and haphazard arrangement of scales are the hallmark of DN (Fig 6). [4]

The clinical and dermoscopy features and dermoscopy-histopathology correlation are depicted in table 1.

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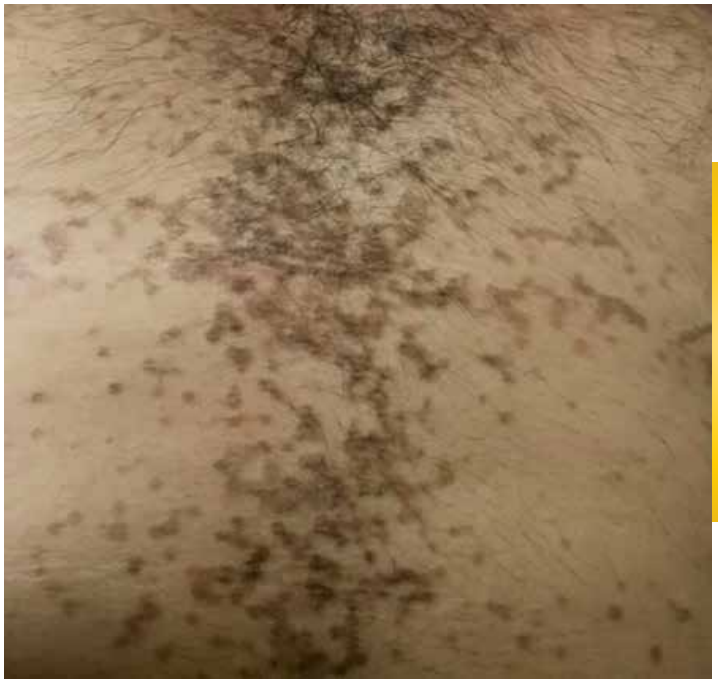


Figure 1: Clinical image of confluent reticulated papillomatosis showing keratotic papules with adherent scales on the trunk.

[Reused with permission: Ankad BS, et al., Hyperpigmented disorders. In: Dermoscopy histopathology correlation. Ankad BS, Mukherjee SS, Nikam BP (edrs), Singapore: Springer Publications, 2021. pp. 145-183.]

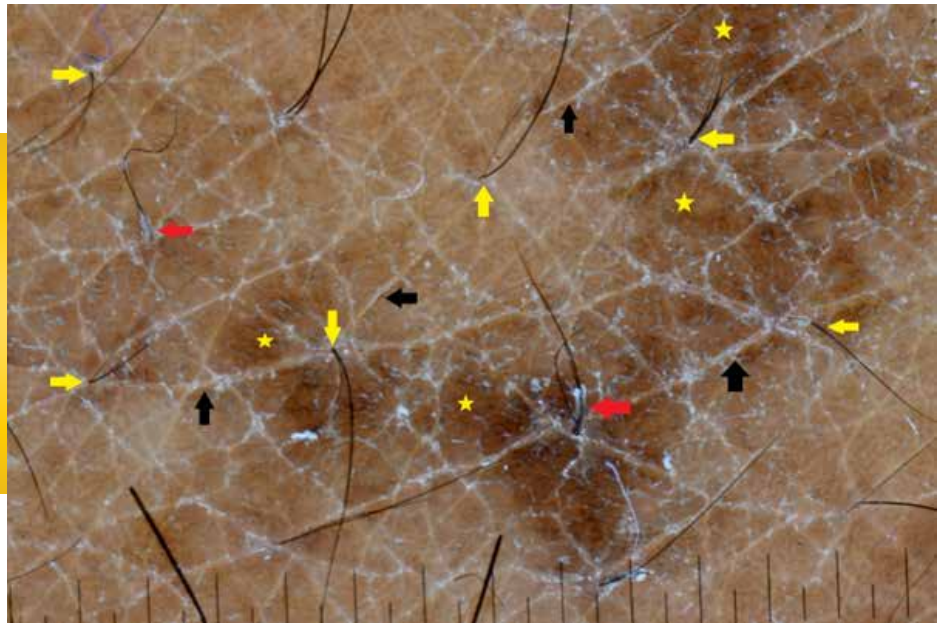


Figure 2: Dermoscopy of confluent reticulated papillomatosis shows tubular scaling (red arrows) around the hair shaft, prominent white scales in the skin cleavage lines (black arrows) and two hairs (V-like hairs) are emerging (yellow arrows) from a single follicle. Brown globules (yellow stars) in 'cobblestone pattern' are well appreciated.

[Reused with permission: Ankad BS, et al., Hyperpigmented disorders. In: Dermoscopy histopathology correlation. Ankad BS, Mukherjee SS, Nikam BP (edrs), Singapore: Springer Publications, 2021. pp. 145-183.]

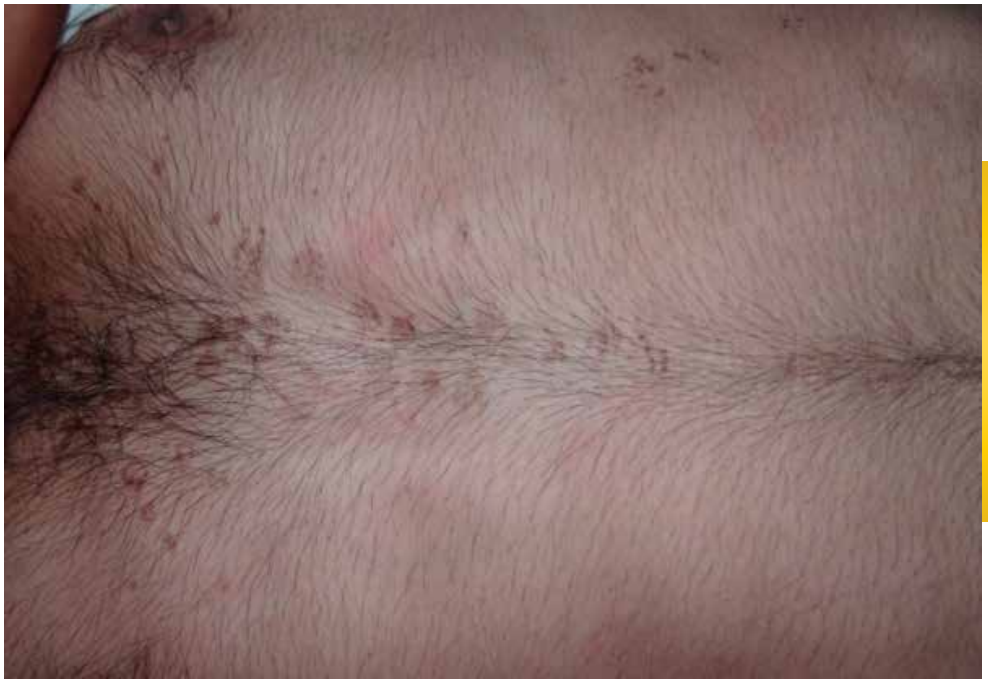


Figure 3: Clinical image of terra firma-forme dermatosis showing dirt-like patches with adherent scales on the chest.
[Reused with permission: Ankad BS et al., Hyperpigmented disorders. In: Dermoscopy histopathology correlation. Ankad BS, Mukherjee SS, Nikam BP (edrs), Singapore: Springer Publications, 2021. pp. 145-183.]

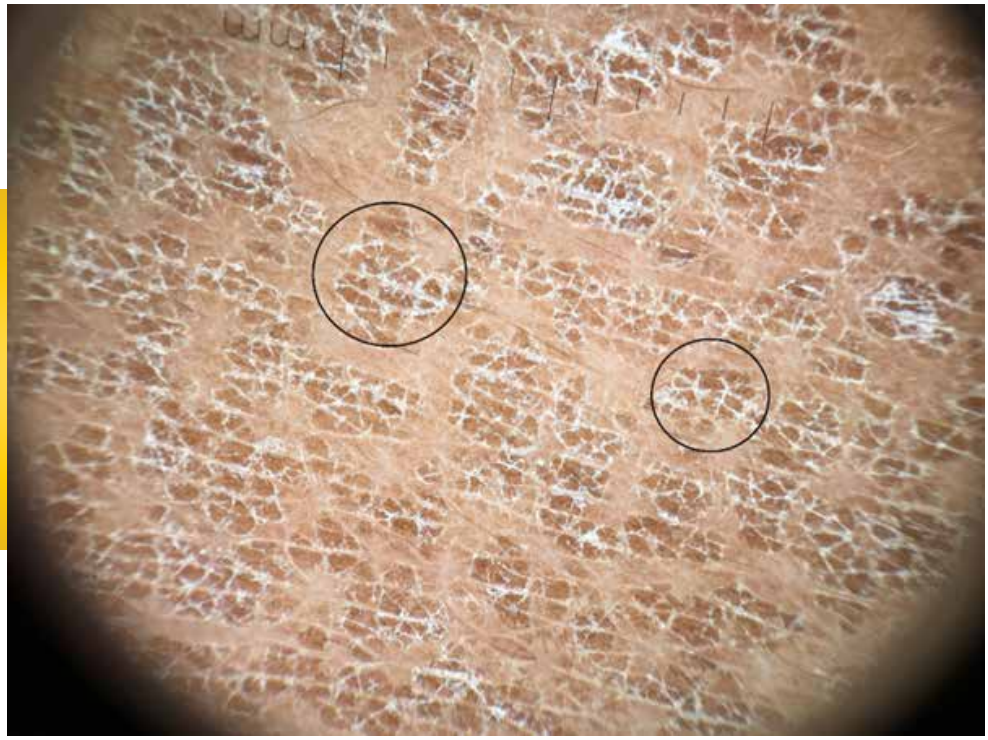


Figure 4: Dermoscopy of terra firma-forme dermatosis shows large polygonal plate-like brown scales (circles) arranged in a regular 'mosaic pattern'.

Figure 5: Clinical image of dermatitis neglecta showing dirt-like patches with adherent scales on the neck.

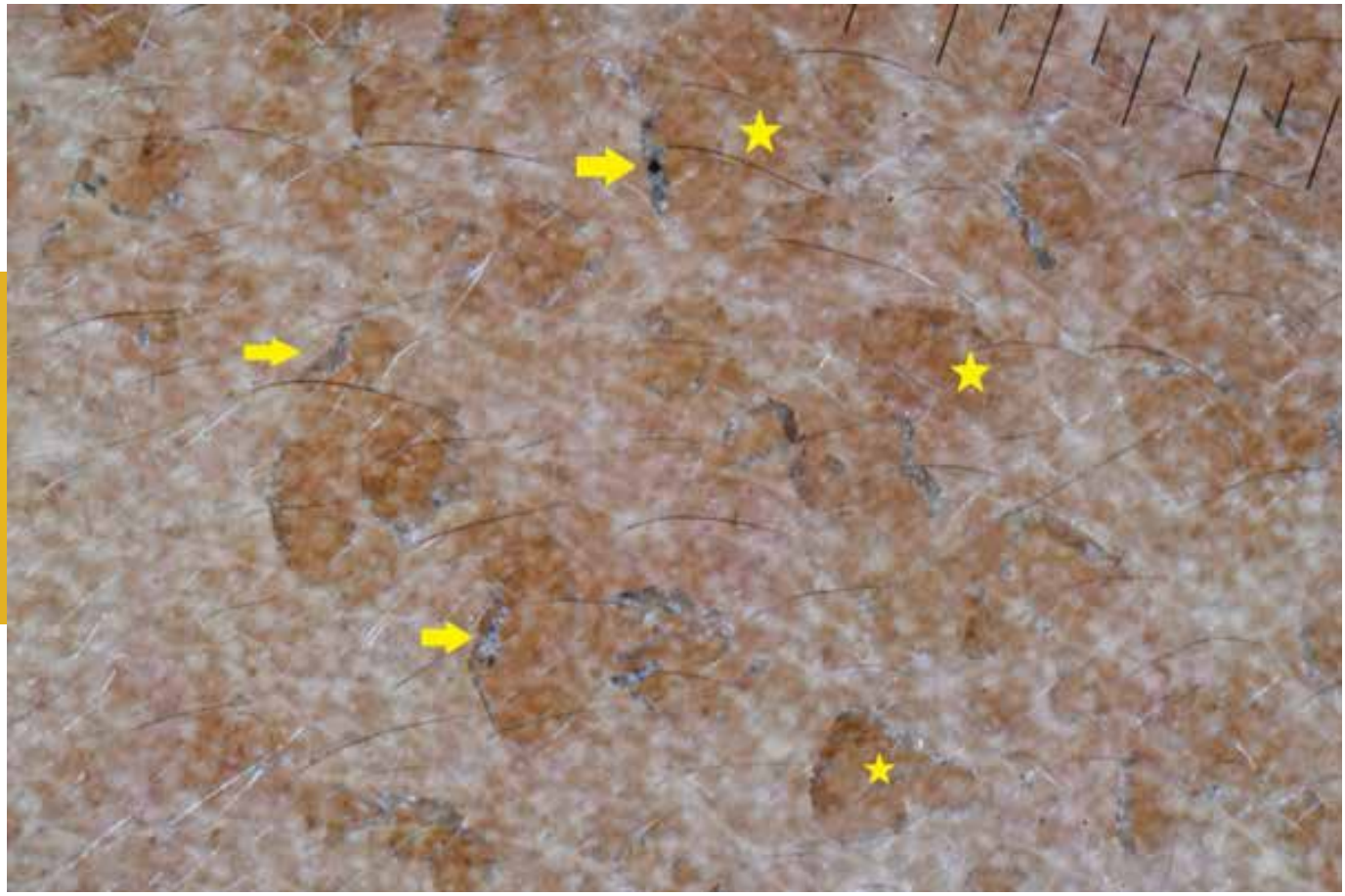


Figure 6: Dermoscopy of dermatitis neglecta shows brown scales (stars) with everted edges (arrows).

Table 1: Clinical and dermoscopic differences with histopathological correlation between confluent reticulated papillomatosis, terra firma-forme dermatosis and dermatitis neglecta

Condition	Clinical Features	Dermoscopy	Histopathology
Confluent reticulated papillomatosis	Keratotic papules with adherent scales	Sulci and gyri impart brown and white lines Brown globules in gyri give a 'cobblestone pattern' Hair changes	Sulci and gyri represent papillomatosis and valley. Brown globules are due to heavily pigmented epidermis. Hyperkeratosis results in scales
Terra firma-forme dermatosis	Dirt-like patches or plaques with adherent scales	Polygonal plate-like brown scales in a 'regular mosaic pattern'	Polygonal plate-like brown scales result from papillomatosis, acanthosis, and compact orthohyperkeratosis
Dermatitis neglecta	Pigmented patch or plaque with adherent scales	Cornflake-like dark brown scales with everted edges in an 'irregular pattern'	Cornflake-like dark brown scales result from prominent basket-weave hyperkeratosis Dark brown color is due to stacking of stratum corneum, sebum, and debris

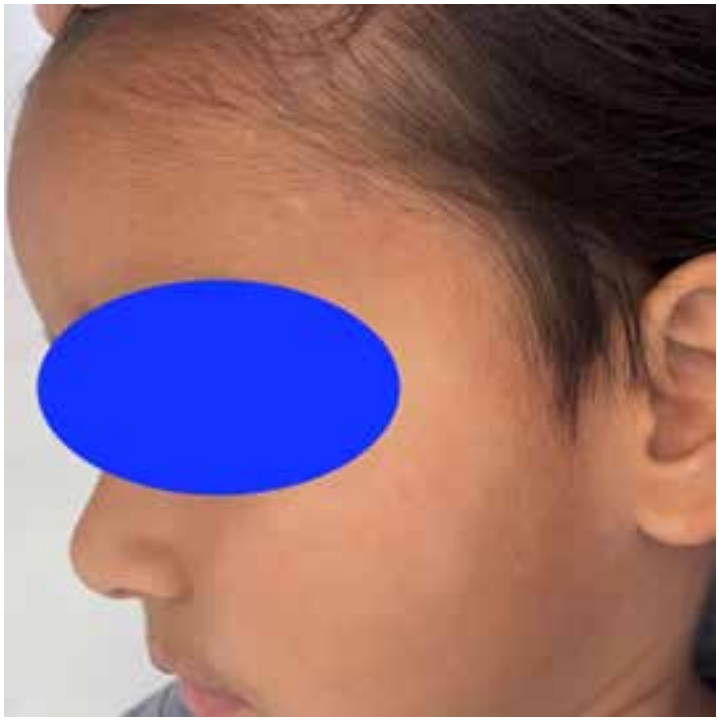
INTERESTING CASES

DR. PAYAL CHAUHAN

Case 1:

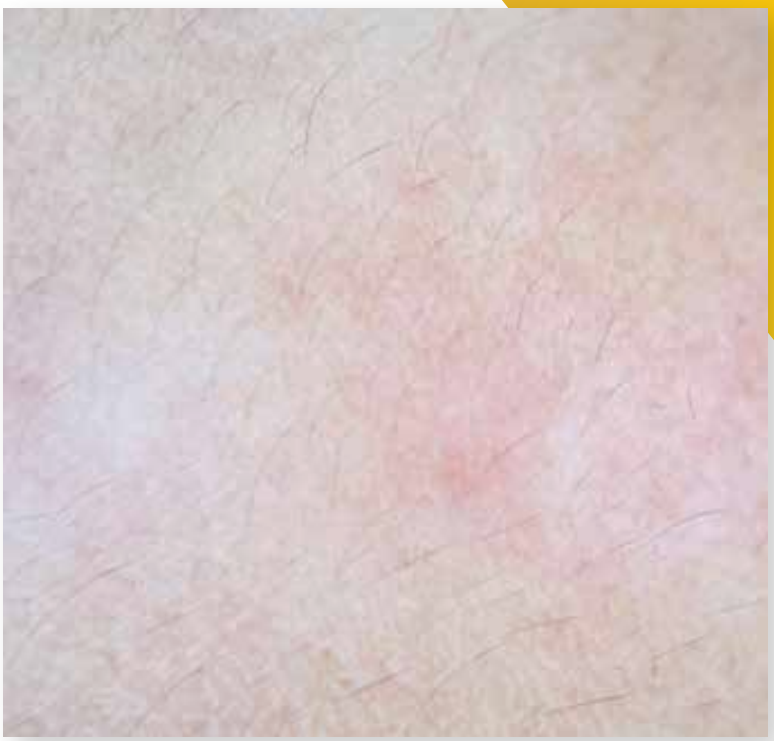
Clinical presentation:

A 7-year-old female child presented with multiple hypopigmented patches over her face for two months. No other significant history was present ([Fig. 1a and b).



Dermoscopic examination:

Dermoscopy of the hypopigmented patch over the cheek revealed an ill-demarcated lesion with fine scales over a background of erythema and hypopigmentation (Fig. 2a). In contrast, dermoscopy of lesions on the forehead revealed a diffuse white glow, absent pigment network and micro-Koebner's phenomenon (Fig. 2b, and c).



Diagnosis:

Pityriasis alba over the cheek with vitiligo over the forehead

Discussion

When faced with hypopigmented lesions over the face, dermoscopy can aid in reaching the diagnosis as in the present case. Dermoscopy of pityriasis alba shows ill-defined hypopigmented lesion with scaling and erythema, which can help differentiate it from vitiligo which shows diffuse white glow, distorted pigment network, perifollicular pigmentation/depigmentation, and leukotrichia. [1, 2]

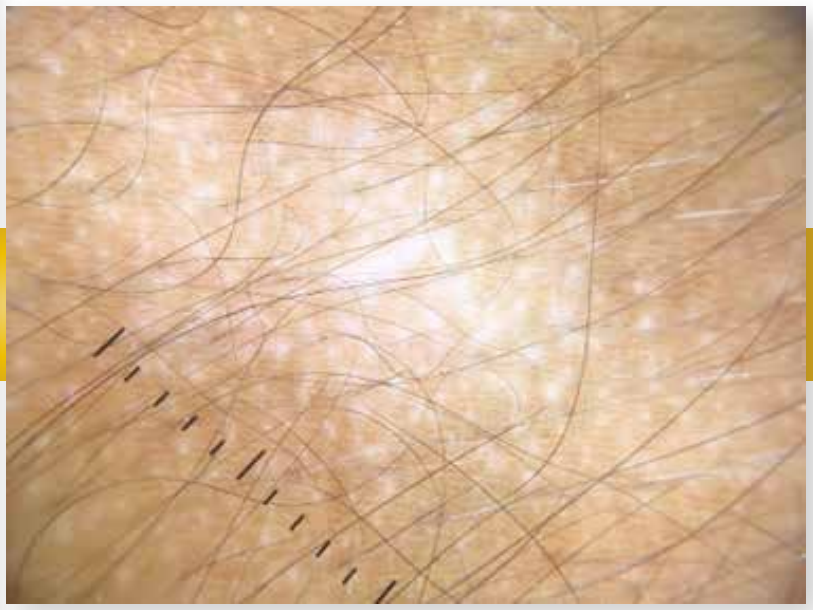
Case 2

Clinical presentation:

A 35-year-old male presented with multiple hypopigmented macules grouped over the dorsal aspect of the right forearm (Fig. 3).

Dermoscopic examination:

Dermoscopy revealed a diffuse white glow with ill-defined margins, absent pigmentary network, tapioca sago appearance, and comet tail sign (Figure 4).



Diagnosis: Vitiligo

Discussion

The appearance of grouped hypopigmented macules over photo exposed site raised the possibility of a polymorphic light eruption, but the presence of diffuse white glow, absent pigmentary network along with the tapioca sago appearance and comet tail sign upon dermoscopy clinched the diagnosis of vitiligo. Dermoscopic findings of ill-defined margins, tapioca sago appearance, and comet tail sign are markers of disease activity in a case of vitiligo, reflecting the progressive nature of the disease, which can also help further tailoring treatment-related decisions. [2]

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PIGMENTED BASAL CELL CARCINOMA VERSUS NODULAR MALIGNANT MELANOMA: A DIAGNOSTIC CHALLENGE

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It is not uncommon to encounter patients with pigmented lesions on the facewhich have been growing and changing. The differential diagnosis includes benign nevi, pigmented seborrheic keratosis, pigmented Bowen's disease, pigmented basal cell carcinomas (BCC) and melanomas, among others.(1) Dermoscopy is extremely useful in such situations in determining the nature of the lesions as there are significant implications on triaging for Mohs procedures. In this article, we will describe the role of dermoscopy in differentiating pigmented BCC from melanoma.

When we suspect melanoma, regardless of the variant, it is important to perform a punch biopsy rather than a shave biopsy to determine the Breslow depth and T staging to determine the treatment options. For BCC, we can often get away with a less invasive shave biopsy as regardless of the depth, the patient will undergo Mohs surgery for excision with appropriate margins. Hence determining the nature of the lesion prior to performing the biopsy is essential. (2)

Pigmented BCC is more common in individuals with skin of color and accounts for about 2-6% of all BCCs.(1) Clinically, it presents as a brown, blue, or black lesion with a translucent and raised border. (Figure 1) The pigmentation is thought to be due to increased melanin production by benign melanocytes, which colonizes the tumor. (3)

Previous studies have shown that in addition to arborizing vessels, leaf-like areas, and spoke wheel areas with or without ulceration, classic features of pigmented BCCs include large blue-grey ovoid nests and multiple blue-grey globules. (4, 5) (Figure 2)

On the other hand, nodular melanomas present as darkly pigmented nodules of varying sizes, occasionally with ulceration. (Figure 3) On dermoscopy, in addition to the well-described features of melanoma as per the 7-point checklist, blue-black colour involving >10% of the surface of the lesion is characteristic. This is thought to be due to a combination of pigments localized in the mid-deep dermis (blue) and the epidermis (black). Other features of a nodular melanoma include a homogenous disorganized pigment network, homogenous blue pigmented structureless areas, multiple (≥3) colors, the combination of polymorphous vessels and milky-red globules/areas, and symmetric shapes. (6, 7) (Figure 4)

Thus, as described above, dermoscopy can be a useful tool to differentiate pigmented BCC from nodular melanoma. The biggest caveat to this is that at times, heavily pigmented lesions may be misdiagnosed, as the abundance of pigment masks the characteristic features. In such situations, alternative non-invasive diagnostic modalities, e.g., reflectance confocal microscopy, may be beneficial but is not practical in many clinical scenarios due to the lack of availability.(8)

In summary, though dermoscopy is an invaluable non-invasive diagnostic tool for differentiating nodular melanoma from pigmented BCC, we need to be aware of its shortcomings. Histopathology remains the gold standard in the diagnosis of these conditions at the current moment.

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Figure Legends :

Figure 1: Pigmented basal cell carcinoma: Brown-black plaque with a raised translucent border

Figure 2: Dermoscopy of pigmented basal cell carcinoma: leaf-like areas, spoke wheel areas, blue-grey ovoid nests and multiple blue-grey globules.

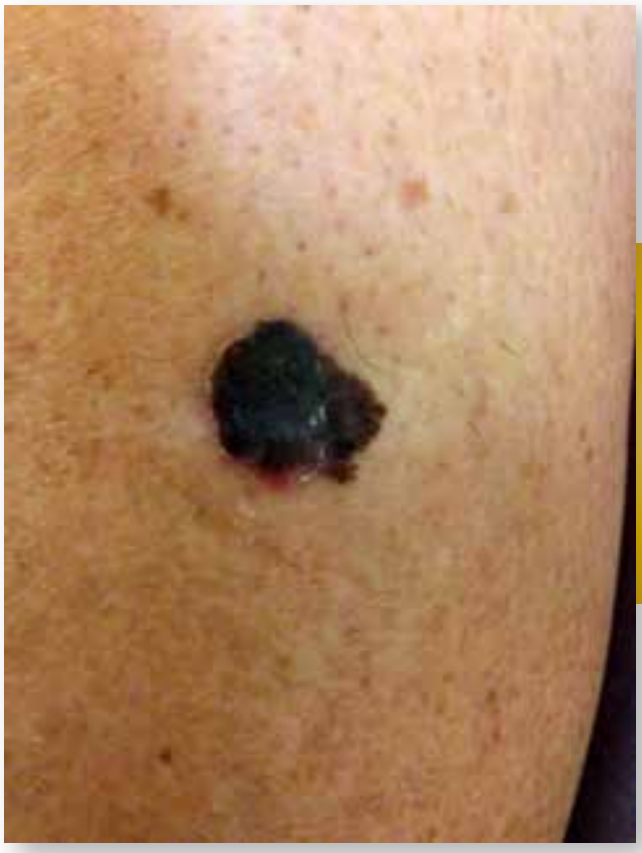


Figure 3: Nodular Melanoma

Figure 4: Dermoscopy of nodular melanoma: blue-black colour involving >10% of the surface of the lesion, blue-white veil, homogenous disorganized pigment network, focal blue-black globules, and multiple colors milky-red globules

ACKNOWLEDGEMENT:

I thank Dr. Fabian Rodriguez-Bolanos MD, University of Toronto, for kindly providing me with the images.

PIGMENTAROSCOPY QUIZ

DR. SHISHIRA R J

1. All are seen in dermoscopy of lentigines except -

a) Moth eaten borders

b) Fingerprint like areas

c) Pseudonetwork on face

d) Snail track-like pattern

2. All of these are dermoscopic patterns of idiopathic guttate hypomelanosis except -

a) Nebuloid

b) Petaloid

c) Feathery

d) Comet tail like

3. BPLeFoSK dermoscopic criteria is used in which pigmentary disorder?

a) Vitiligo

b) Melasma

c) Lichen planus pigmentosus

d) Post inflammatory hyperpigmentation

4. The three-point checklist requires the assessment of lesions for all of these dermoscopic criteria except -

a) Asymmetry

b) Atypical vascular pattern

c) Atypical network

d) Blue- white structures

5. Menzies method - an algorithm to suspect melanoma should have all of these positive features except -

a) Blue white veil

b) Pseudopods

c) Scar-like depigmentation

d) Peppering

e) Pattern symmetry

6. _____ was the first one to study dermoscopy of pigmented lesions and the first to describe pigmented globules in melanocytic nevi.

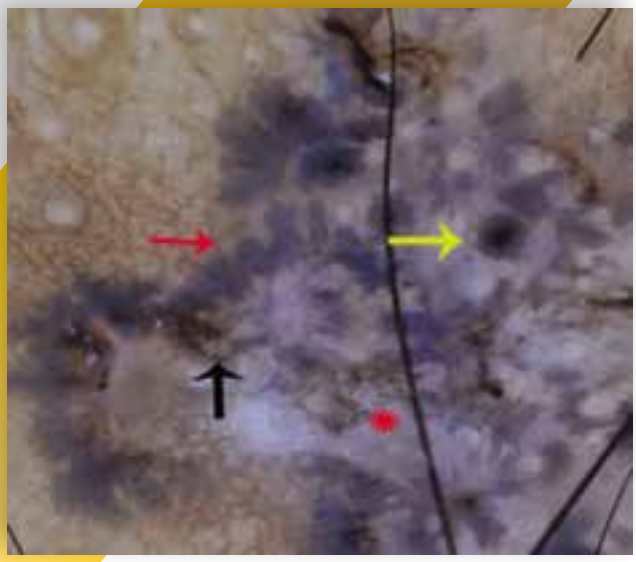
7. Non-polarised dermoscopy is better for visualizing _____ structures and polarized dermoscopy is better for _____ structures.

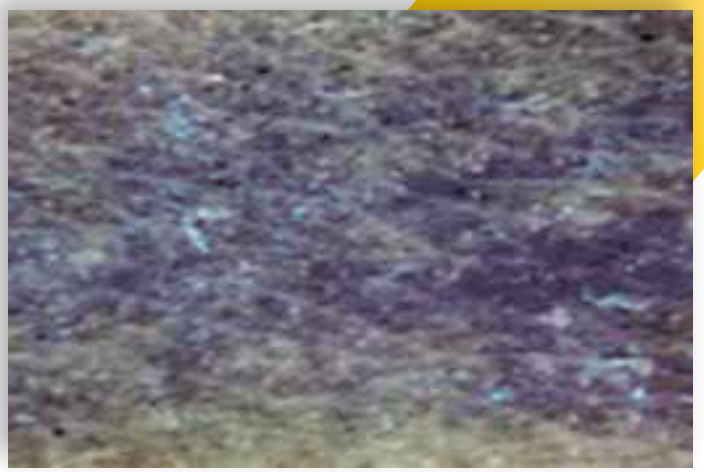
8. Hem-like regular distribution of pigment clusters is seen in _____.

9. **"Jelly sign" an aggravated pigmentation with concave borders with characteristic sparing of adnexal openings, is seen in _____.**

10. "Fat fingers" and cerebriform appearance of fissures and ridges are primarily seen in _____.

11. Dermoscopic metaphoric terminologies "spoke wheel areas" and "leaf like areas" are suggestive of _____.





12. Linear crista cutis and sulcus cutis pattern with multiple focal hyperpigmented dots are primarily seen in _____.

SNIPPETS FROM CURRENT LITERATURE IN PIGMENT DERMOSCOPY

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Dermoscopy has traditionally been used for differentiating pigmentary disorders, including malignancies. Over the years, newer dermoscopic features and additional utility have been conferred upon this diagnostic, prognostic, and therapeutic aid. A few snippets to this effect are shared herewith, pertaining to various pigmentary disorders, including only recent updates in the past two years.

Hyperpigmentary Disorders

Melasma

Various pigmentary patterns reported in melasma include pseudonetwork, reticulate pigmentation, reticuloglobular and honeycomb, dotted and even unpatterned, in dermal melasma. Adnexal sparing remains the most important differentiator. Vascular patterns are commonly noted due to increased vascular growth factors or long-term steroid usage. The color and extent of the pigment denote the depth. Epidermal being patchy and brown-black, dermal being diffuse and bluish-gray, as is known already. Dermoscopy scores over Wood's lamp in that the former is not affected by cosmetic products, collagen, or skin type. Therapeutic tracking may be done with dermoscopy if clinical improvement is not evident early on.

Solar Lentigines

"Moth-eaten edges" and a "fingerprint" pattern of wavy lines have been described for solar lentigines to distinguish them from ephelides, seborrheic keratosis, and lichen

planus-like keratosis.

Poikiloderma of Civatte

The dermoscopic constellation includes follicular plugging, vascularity (dots and lines conforming to a "spaghetti and meatball appearance", reticulated hyperpigmentation and structureless areas (mostly denoting atrophy), easily differentiating it from pigmented contact dermatitis and TSDF.

Exogenous ochronosis (EO)

An adverse effect of using phenolic compounds, including hydroquinone, EO is marked by a rather symmetrical distribution of "worm-like" or curvilinear, arciform brown to blue-gray structures (banana-shaped ochre dermal deposits) with caviar-like papules (colloid milium) and white, dotted areas (confetti-like depigmentation), obliteration of follicular openings and sometimes leucotrichia to differentiate the bleaching effect from melasma.

Lichen Planus Pigmentosus

Akin to melasma, few pigment patterns have been reported - pseudonetwork, speckled (non-uniform dots), uniform dots, and "dots-in-circles" and the hem-like pattern of dot distribution. This pattern is accompanied by blue-gray dots and globules and a vascular backdrop.

Erythromelanosis follicularis faciei et colli

EFFC is characterized by gray-blue dots over a red brown background, with white perifollicular scaling (dots "peppered" inside and around the follicular opening) where LPP is more diffuse and structureless and PCD is more vascular and structureless.

Erythema dyschromicum perstans / Ashy Dermatoses

Pinpoint grey dots over a bluish gray backdrop in a "Wagyu beef-like appearance" - a combination of pigmented cristae and dots suggesting melanin incontinence. Vascularity is almost always seen, as per the nosology as linear or coiled vessels. It has a more homogenous dot pattern than LPP, smaller dots (less brown than LPP) and is less diffuse in general.

Pigmented Contact Dermatitis (Riehl's melanosis)

Pseudonetwork, grey dots, and globules are seen in almost all patients; with erythema and telangiectasia, and scaling may or may not be seen. Follicular plugging with perifollicular halo has also been reported in this condition. The need for patch testing for

this condition cannot be overemphasized, as there exists a significant overlap between PCD, EDP and LPP, which also forms the basis for an umbrella entity - "Acquired Dermal Macular Hyperpigmentation."

Confluent and Reticulated Papillomatosis and Acanthosis nigricans

These entities share dermoscopic features - apart from the characteristic sulci-gryi-cristae pattern, dermoscopy reveals a "crocodile skin-like pattern". Few lesions may show milia-like cysts and a cerebriform pattern. Dermoscopic likeliness also extends to terra firma-forme, which has polygonal brown clods and dermatosis neglecta, which has irregular, cornflake-like scaling.

Hypo-/Depigmentary Disorders

Pityriasis versicolor

Hypopigmented (Hyperpigmented in pigmented PV) oval macules with diffuse scaling can be seen. Dermoscopy can reveal scaling without the clinical scratch sign. Scaling has recently been described as diffuse, lesional and perilesional in various reports. Halo sign in hypopigmented and contrast halo in hyperpigmented PV has been reported. The macules themselves have been likened to a cloudy-sky distribution on dermoscopy.

Vitiligo

Apart from the usual constellation, newer reports use the terms to describe dermoscopy of vitiligo - the "micro-koebner phenomenon" - fine, white streaks at the periphery of the lesion, and a "tapioca-sago" like depigmentation, classically seen in perilesional, (not yet involved) skin and is considered an early marker of active disease.

Idiopathic Guttate Hypomelanosis

The shape of the lesion is described as amoeboid, feathery, nebuloid, petaloid for its edges, and an overall discrete, "stuck-on" appearance on dermoscopy.

As appended below (Fig. 1), a crude flowchart can be used as a ready reference.

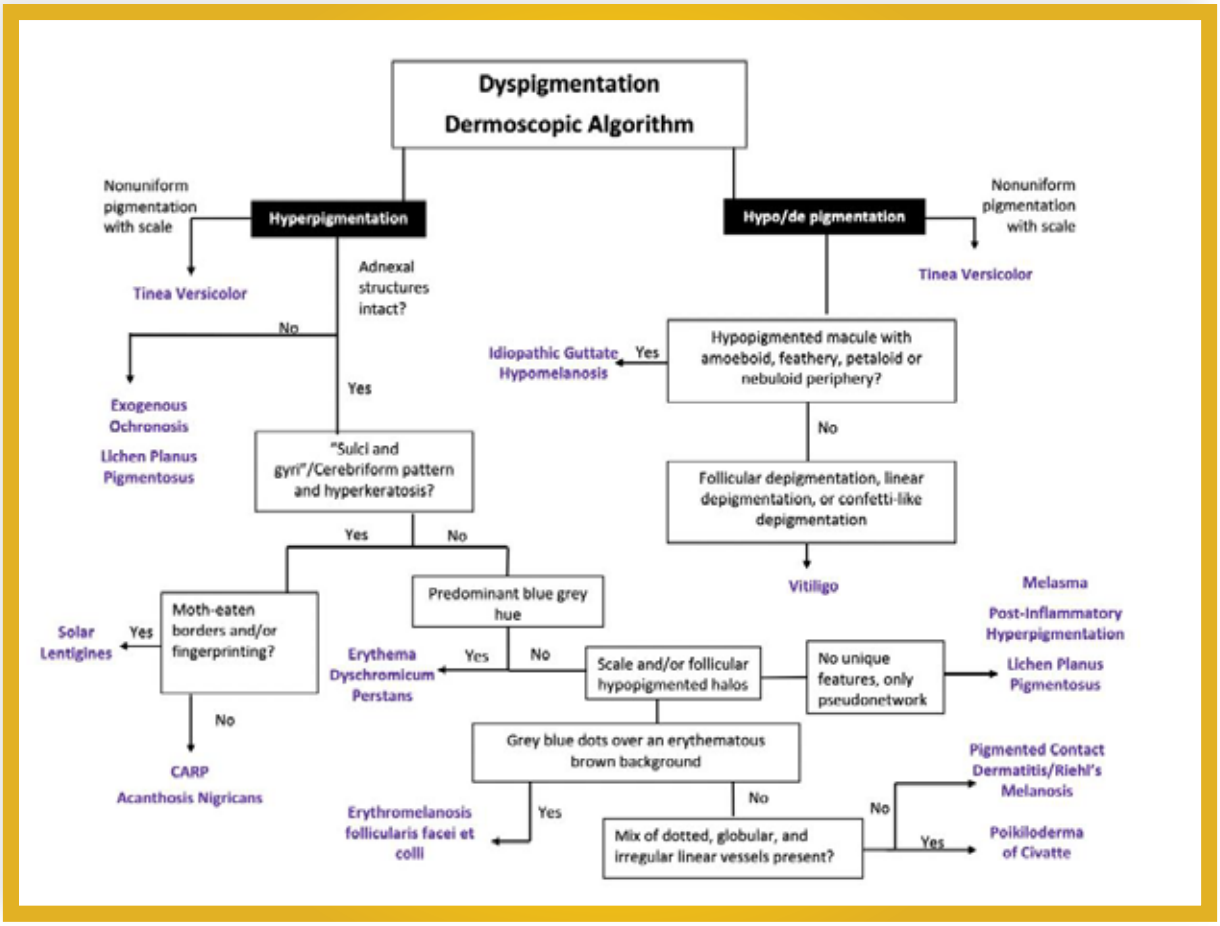

Figure 1: The Pigmentary Dermoscopic Algorithm (Adapted from Kruger et al. 1)

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ANSWERS

1. d
2. d
3. a
4. b
5. e
6. Johann saphier
7. Surface and subsurface structures
8. Lichen planus pigmentosus
9. Melasma
10. Seborrhoeic keratosis
11. Pigmented basal cell carcinoma
12. Acanthosis nigricans