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*RESEARCH ARTICLE*

# DERMOSCOPIC FEATURES OF PIGMENTARY DISORDERS IN INDIAN SKIN : A PROSPECTIVE OBSERVATIONAL STUDY

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## Abstract

**Introduction** : Several studies have shown dermoscopy as an easily accessible tool for assisting the noninvasive diagnosis of various general dermatological disorders. The present study was conducted to evaluate the use of dermoscopy for diagnosis of pigmented skin lesions.
**Methods**:In this Observational & Analytical study after Multi-staged Random sampling 100 study subjects /Patients were selected having various pigmentary lesions which were later evaluated by dermoscope. All the photographs were captured using android mobile camera and dermlite DL4 hybrid dermoscope (both polarised and nonpolarized).
**Results**: Among the 100 patients /participants studied, 40% were males &60 % were females with the range of age between 3 to 60 years . The most common pigmentary lesions found were melasma (20%), Vitiligo (12%) , pityriasis versicolor(10%) among other types.
**Conclusion**: Dermoscopy may result in confirmation of clinical diagnosis, oftenavoiding the need for a skin biopsy. Appreciation of the post-treatment effect via dermoscopy oftenprecedes clinical improvement; this is especially true of chronic relapsing, recalcitrant dermatoses like melasma, lichen planus pigmentosus (LPP), vitiligo, alopecias, etc.Explaining the natureof the disorder becomes easier by patients showing the lesionaldermoscopic image to the patient.

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## Introduction:-

Dermoscopy or epiluminescence microscopy is a non-invasive diagnostic technique which utilizes the principle of illumination and transillumination of skin, for in vivo examination of skin lesions with a magnifying lens. It provides additional information about sub-macroscopic skin features that are indistinguishable to the naked eye and may help differentiate clinically similar conditions without the need for a biopsy. Identification of disease-specific patterns within the skin lesions act as a supplement to the clinical diagnosis. Dermoscopy is finding its place in the field of general dermatology.

Pigmentary disorders are a group of heterogenous conditions. Congenital or acquired disturbances in melanogenesis and melanocyte biology results in either increase in melanin concentration (hypermelanosis/ hyperpigmentation) or decrease in melanin concentration (hypomelanosis/hypopigmentation). Pigmentary disorders carry an especial social stigma in our society and have a significant psychosocial impact. Hence, prompt diagnosis and management of these

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conditions improves patient's quality of life substantially. Biopsy is not always a feasible diagnostic option as it is invasive, and results are sometimes nonspecific, with a significant waiting time. Dermoscopy offers a rapid, non-invasive alternate for the same.

## Methods:-

A minimum of 100 patients with pigmentary skin conditions attending our OPD at Department of DVL, BGH will be included in the study after taking their written informed consent. In each patient a detailed history will be taken, followed by a complete clinical examination. A clinical diagnosis will be made. In all the patients a hand-held Woods lamp (UVA light) examination will be done followed by a dermoscopic evaluation with a Dermlite /DL4 dermoscope (polarized and non-polarized, 10x magnification), and a dermoscopic diagnosis will be reached.

## Results:-

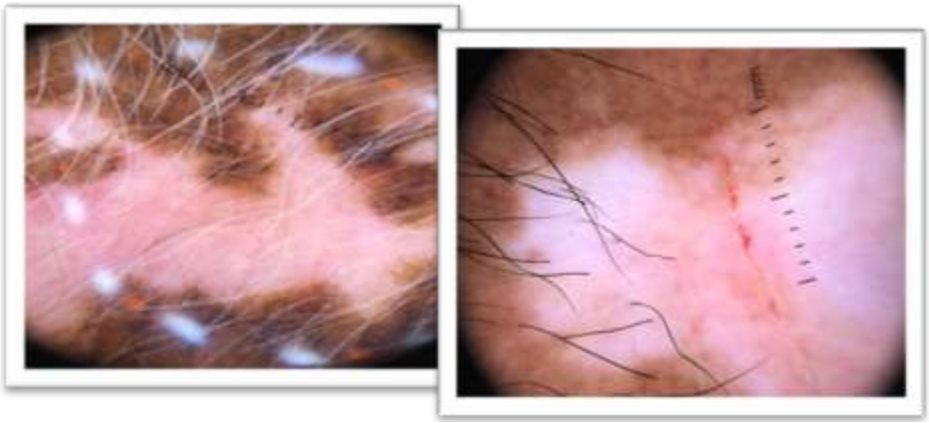
Among the 100 patients / participants studied, 40% were males &60% were females with the range of age between 3to 60 years . All those patients without previous history of topical application were included and their dermoscopic patterns were evaluate

**Hypopigmentary Lesions**

**Vitiligo**

Vitiligo was found in 12% of patients. Diffuse white glow, distorted pigment network (absent, broken, or reverse pigment network; residual pigmentation), perifollicular pigmentary changes (perifollicular depigmentation, perifollicular re-pigmentation), leukotrichia, micro-Koebnerization, starburst appearance, and tapioca sago appearance are the main dermatoscopic features of vitiligo. [1,2]

The hallmark dermoscopic feature of vitiligo, diffuse white light that mimics the shine from a full moon. This is because the incoming light from the top dermal collagen fibres, which would have ordinarily been absorbed by the melanin in the basal layer, was completely reflected. [3]

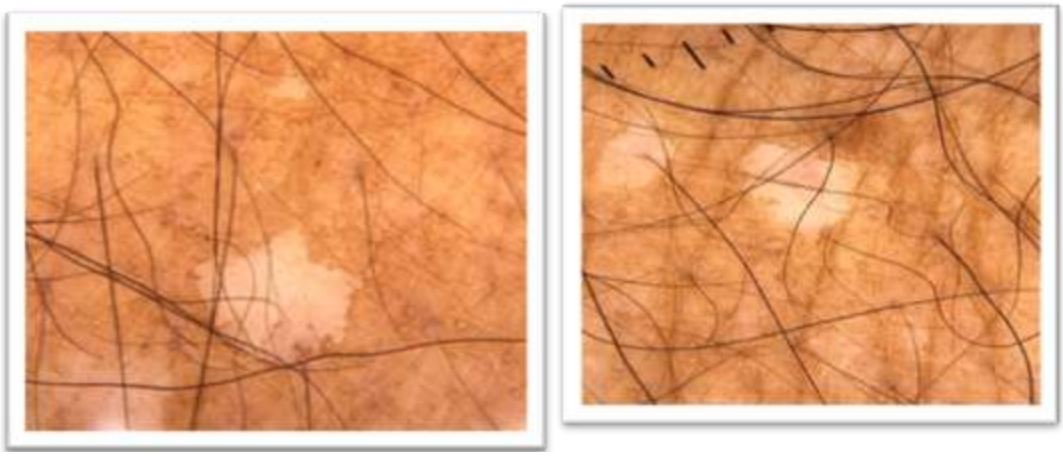


**Idiopathic Guttate Hypomelanosis**

Idiopathic guttate hypomelanosiswas found in 6% of patients. It is an acquired leukoderma of unknown cause found in all races.[4] Its pathogenesis may depend on various factors such as patient age and sun-exposure.[4] Clinically, the lesions appear as porcelain-white macules that are occasionally greater than 2–6 mm in size.

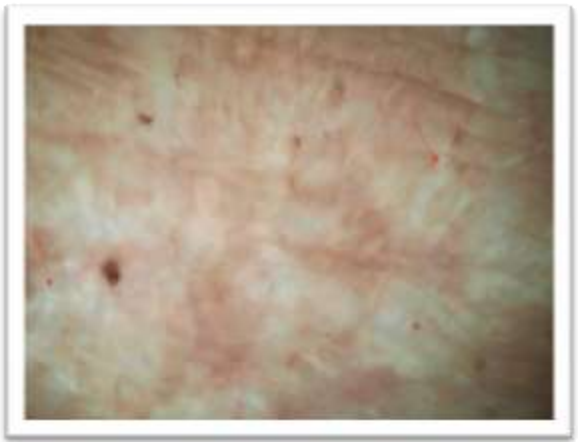
Dermatoscopy of IGH reveals a loss of the pigment network and a diffuse white glow, similar to vitiligo. Yet there are four distinct morphological types that may be identified by dermatoscopic examination of the margins: amoeboid, petaloid, feathery, and nebuloid. [4,5]

The amoeboid pattern shows pseudopod like extensions at the periphery, petaloid shows leaf like extensions, feather like striations are seen in feathery, whereas the margins are indistinct in nebuloid form[4]



**Lichen Sclerosus Et Atrophicus**

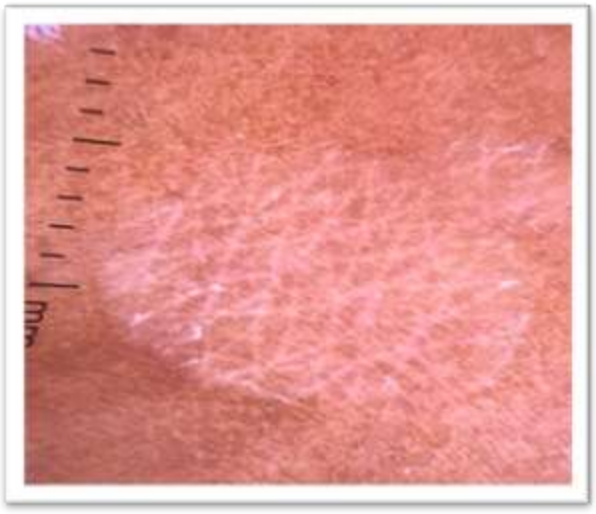
Lichen sclerosus et atrophicus (LSA) was found in 4% of patients. It can be a diagnostic challenge wherein, it can be misdiagnosed as guttate vitiligo, IGH, and morphea. The early inflammatory phase shows background erythema, follicular keratinous plugs, and linear telangiectatic vessels.[6] The late sclerotic phase shows loss of pigment network, linear fibrotic strands representing upper dermal fibrosis with or without follicular plugging.[6] LSA of ethnic skin in addition shows peppering of brown and blue-gray pigment dots and globules. This is due to basal cell vacuolization and subsequent melanin incontinence.



**Pityriasis Versicolor**

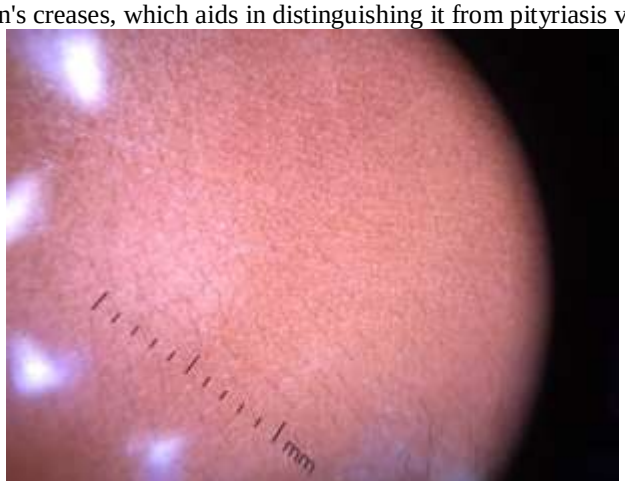
Pityriasis versicolor (PV) or tinea versicolor was found in 10% of patients. It is a superficial mycosis caused by Malassezia genus that is a dimorphic lipophilic yeast.It presents with multiple scaly macules of varying pigmentation that tend to coalesce to from larger lesions[7].

Most common dermoscopic feature were alteration in the background pigmentation, decreased reticulate pigmentary network in the hypopigmented variant , scales seen predominantly along the dermatoglyphics. The lesions were found to be folliculocentric.This contrast halo ring was recognised in hypopigmented variants as a ring of elevated pigmentation encircling the underlying lesion of diminished pigmentary network [7].



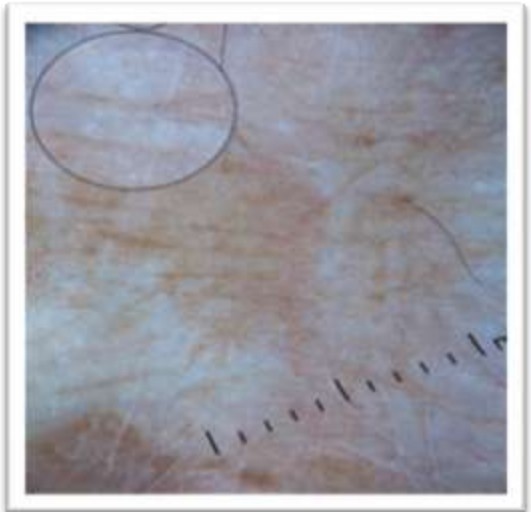
**Pityriasis Alba**

Pityriasis alba is found in 8% of patients. It is a type of eczema or dermatitis which presents as hypopigmented, dry macules, or patches with mild scaling, more commonly observed over the face in young children. The dermoscopy features include fairly ill-demarcated white areas with brownish-white background color. A faint pigment network is observed in the background. Hairs within the lesion are normal.The distribution of the scales in pityriasis alba is focal rather than along the skin's creases, which aids in distinguishing it from pityriasis versicolor[8].

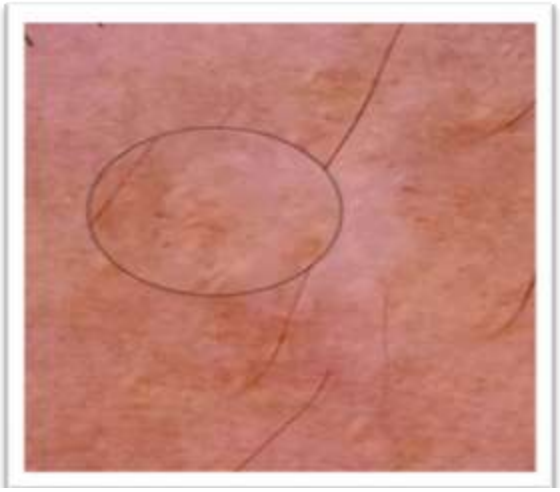


**Hypopigmented Patch Of Leprosy**

Hypopifmented patch of leprosy is found in 2% of patients. White patches, a soft brownish pigment network with distortion, diminished white dots (eccrine and follicular openings), and hair modifications including pigtail hairs, short or broken hairs, and V-shaped hairs are typical dermoscopic patterns. Scales are not discernible. Leprosy flat hypopigmented patches do not show vascular alterations because granuloma destroys the vascular architecture. Yet, due to inflammation and rich vascularity, respectively, elevated (plaque, nodules, reactional lesions) and face lesions disclose vascular components. Therefore, aside from face and elevated lesions in extra-facial lesions, leprosy patches do not exhibit yellow globules with telangiectasia, the dermoscopic pattern of a granuloma[9].



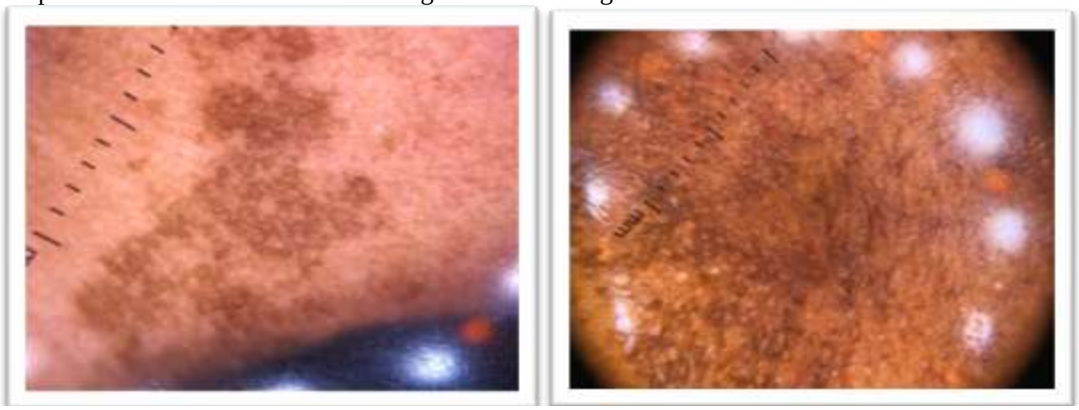
**Post Inflammatory Hypopigmentation**:
Post inflammatory hypopigmentation was found in 2% of patients. Dermoscopy in postinflammatory hypopigmentation reveals features similar to the parent dermatosis with white structureless areas over pink background, for example, nondotted vessels/orangish structureless areas in pityriasis lichenoides, Guttate psoriasis with dotted vessels, star-like depigmentation in prurigonodularis, hypertrophic lichen planus after intralesional steroid injections demonstrates white structureless areas with pink background and yellow follicular plugging (comedo-like openings), and depigmented lesion post-trauma with white structureless areas in the area of [8]



**Hyperpigmentary Conditions**
**Melasma**
Melasma was found in 20% of patients. It is a common, multifactorial hyperpigmentary disorder with a complex pathogenesis. Clinically, it appears as symmetrical hyperpigmented patches and macules over the face, primarily on the forehead and malar regions. Occasionally, it may include more face locations in addition to the arms and trunk.Based on where the melanin is located, clinical examination, Wood's lamp, and dermoscopy can help classify it as epidermal, dermal, or mixed variations. However, the majority of melanomas are now classified as mixed melanomas since the dermis also exhibits solar elastosis and enhanced vascularity[10]. Evaluation should look into the depth and arrangement of pigment, vascular morphology, and other additional clues Dermoscopic features of melasma include the following[10,11]

1. Light brown to dark brown pigment depending upon the depth of melanin in the skin
2. Reticular or pseudo reticular pigment network, annular and arcuate structures
3. Perifollicular and peri-appendageal sparing
4. Brown and gray dots and globules

5. Vascular prominence in some cases and telangiectasia resulting from steroid abuse

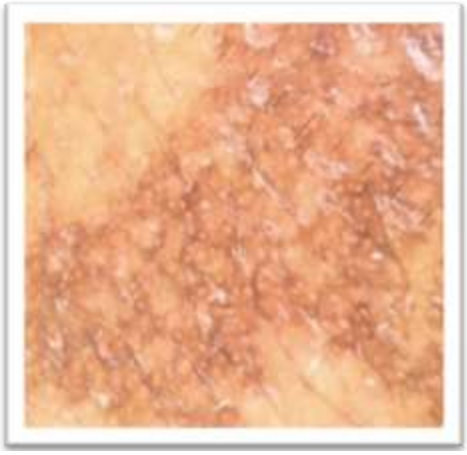


**Hyperpigmented Pityriasis Versicolor**

hyperpigmented p. versicolor was found in 8% of patients.Dermoscopy of hyperpigmented pityriasis versicolor (HPV) shows accentuated pigment network or diffuse brownish pigmentation with fine white scales Margins of the lesions are well demarcated. Although scales are confined mainly to skin furrows they are distributed in patchy, perifollicular, and diffuse patterns[11]

**Seborrheic Melanosis**

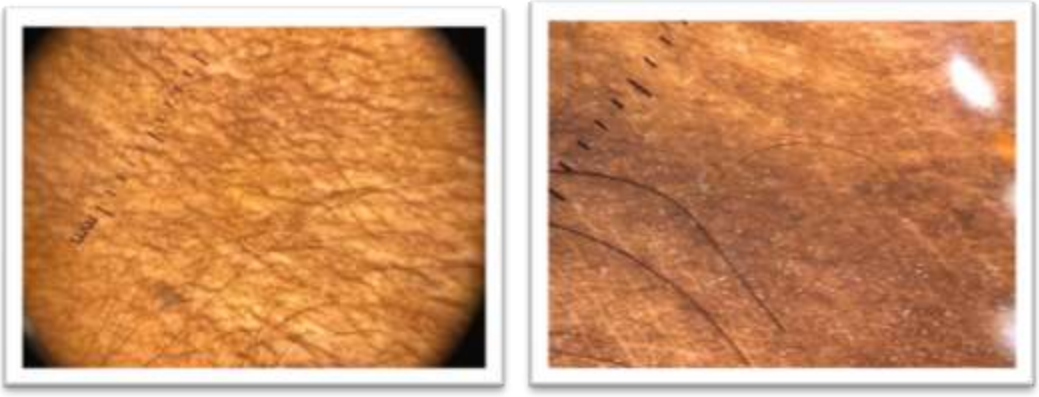
Seborrheic melanosis or sebomelanosiswas found in 5% of patients. It is considered to be post-inflammatory sequelae of seborrheic dermatosis, unique to pigmented races. The described dermatoscopic features of sebomelanosis include prominent pseudonetwork, brown granular structures, ill-focussed vessels, prominent follicle openings, and whitish-yellow excrescences of sebum coating the vellus hair shafts [12,13]



**Acanthosis Nigricans**

Acanthosis nigricans was found in 10% of patients. The longitudinal crista cutis and sulcus cutis of acanthosis nigricans (AN) are frequently seen on a dermoscopy along with sporadic globules and spots that are black or dark brown. There are exophytic papillary structures in chronic lesions with thickened skin. [14] The background color is alternating darker brown or grayish-brown in the crista cutis region and white (hypopigmented) in sulci cutis.[9]Dots or globules vary in size and take the diverse shapes according to their orientation of pigment in the papillary structures.

According to histopathology, linear crista cutis is an elevated, pigmented epidermis caused by papillomatous dermal projections. The surrounding epidermis is likewise pigmented, as shown in the sulcus cutis. Yet, it is important to notice that the white hue of the sulci cutis is caused by the stratum corneum's basket weave filling the valley of the epidermis that has advanced downward. [15]



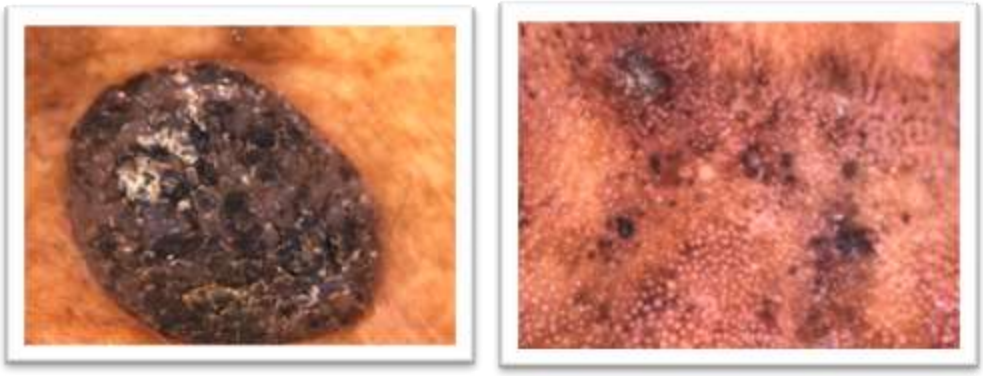
**Seborrheic Keratosis**

Seborrheic keratosis (SK) was found in 10% of patients. It is the most common benign epidermal tumor of the skin. Although SK has been thoroughly defined from a clinical, dermoscopic, and histological perspective,

The majority of times, the diagnosis of SK is made by clinical examination, although occasionally, it might be challenging to distinguish between SK and malignant melanoma.

It is important to distinguish between the dermoscopic finding of the NL structures (46%) and the normal pigment network found in melanocytic lesions[16].

Dermoscopic findings of SK include ML cysts, CL openings, FR, ME borders, HP blood vessels, FP-like structures, and SD.[16]



**LPP**

LPP was found in 1% of patients. It is characterized by generally asymptomatic (sometimes itchy) and diffuse (less frequently reticular, blotchy, or perifollicular) hyperpigmented dark-brown to slate gray to black macules present mostly overexposed areas and flexures. The lesions lack the erythematous border of EDP[17]

Wickham striae and vascular characteristics are absent from LPP, according to a dermoscopic study. It is distinguished by the presence of irregularly enhanced pigment patterns, such as slate grey to blue specks and globules. Accentuated pigment deposition surrounds the acrosyringium. Noted pigment accumulation within the follicle. Moreover, a "hem-like" pigment pattern has been noted, and the dermoscopy background is brown. [17,18]

**Riehl's Melanosis/Pigmented Cosmetic Dermatitis**

Riehls melanosis was found in 2% of patients. It is attributable to phototoxic reaction develops after skin contact with photoactive agents. Tar derivatives, cosmetics, and fragrancesare suspected to be the cause and is more common in middle-aged women.

Across the majority of the face,brownish-gray pigmentation appears rather quickly, although it is more pronounced on the forehead and temples. Beyond the ambiguous boundary are smaller, often perifollicular pigmented macules. [17]

Dermoscopy of pigmented contact dermatitis reveals an irregular distribution of brownish-gray spots and globules with a false reticular network and an erythematous backdrop.[17,19]

## Discussion:-

In our dermoscopic examinations of total 12 patients (n=12, M:F=3:4) with vitiligo of different stages involving stable as well as unstable vitiligo dermoscopy of progressive or unstable vitiligo studied by Jha et al. (2017) showed a polka dot or confetti like pattern, trichrome pattern, comet-tail pattern and star burst/feathery pattern tapioca or sago grain pattern in normal skin adjacent to a vitiligo lesion had also been recently described in progressive vitiligo which was very much similar to the observations made in our study.Also, Chatterjee and Neema (2018) reported the

occurrence of marginal hyperpigmentation and reticular pigmentation in repigmenting or stable vitiligo perifollicular pigmentation

Bambroo **et al.** appreciated four patterns dermoscopy of IGH namely nebuloid, petaloid, feathery and amoeboid. Similar patterns were observed in our study. Nebuloid pattern of IGH was observed in lesions of recent onset and also among older patients. Feathery, amoeboid, and petaloid patterns were more commonly seen in older lesions of IGH. Histopathology confirmed the clinical diagnosis in our study.

Dermoscopic analysis of the lesions revealed a consistent finding of altered pigmentary network (100%) that was found to be folliculocentric (66.67%) and associated with scaling (83.33%) in majority of the cases, characteristic contrast halo ring seen in 66.67% cases around the primary lesion .

In melasma,apseudoreticular pigment network (in eclipse) was seen in all patients with diffuse light brown background present in 8 patients while 10 patients showed dark brown background, with sparing of the peri-appendageal region (follicular and sweat gland openings) present in all patients,. These observations were as per the study of Chatterjee and Neema (2018) . While there was perifollicular pigment accentuation present in LPP, and clustering of dots obliterating openings was feature of riehl‟ s melanosis.

In our dermoscopic examination of LPP we had noticed diffuse brown color and pseudoreticular pigment network (blue arrow), peri- appendageal pigment deposition (in circle) and brown to gray dots and globules (in rectangle). Chatterjee and Neema (2018) performed dermoscopic examination of patients with LPP and observed following features: Absence of Wickham striae, diffuse brown color and pseudoreticular pigment network, slate-gray to blue dots and globules, perifollicular and peri- eccrine gray to brown/gray blue pigment deposition, hem like pigment pattern

Only few studies have been done on the dermoscopy of SK. Braun **et al**. in a study evaluated 203 pigmented SK and reviewed the dermoscopic criteria. The authors found a high prevalence of classic dermoscopic criteria such as CL openings (71%) and ML cysts (66%). The authors have suggested that in addition to these other dermoscopic criteria such as FR (61%), HP blood vessels (63%), SD (90%), and ME border (46%) would improve the diagnostic accuracy and reduce the misclassification into melanocytic lesions.[20]

## Conclusion:-

Conclusions can be summarized as –
Dermoscopy may result in confirmation of clinical diagnosis, often avoiding the need for a skin biopsy. Dermoscopy can confidently predict disease activity, such as alopecia areata, DLE.
Dermoscopy has also been helpful for determining vitiligo stability, a crucial need for surgical intervention. •Dermoscopy enhances doctor-patient communication regarding all facets of skin disease; appreciation of the post-treatment effect via dermoscopy frequently precedes clinical improvement; this is particularly true of chronic relapsing, recalcitrant dermatoses like melasma, lichen planus pigmentosus (LPP), vitiligo, alopecias, etc. By displaying the lesionaldermoscopic picture to the patient, doctors may better explain the disorder's nature.

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