



Research Article

CLINICO-DERMOSCOPIIC CORRELATION OF VARIOUS SKIN CHANGES IN PREGNANCY

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ABSTRACT

**Background:** Pregnancy dermatoses includes group of skin conditions that occurs as a result of interactions of multiple factors a body during pregnancy. Dermatoscopy is an inexpensive, non-invasive, less time consuming, non-painful, OPD technique with good patient compliance that allows observation of magnified cutaneous morphologic features in various pregnancy dermatoses and correlate it with clinical findings.

**Materials and Methods:** A prospective observational study was done on ANC patients attending dermatology OPD with having various skin changes of pregnancy or specific pregnancy dermatoses. Study was carried out in a tertiary care hospital over a period of two years. Lesions of various skin changes in pregnancy and different specific pregnancy dermatoses were clinically diagnosed and were photographed and evaluated by dermatoscopy.

**Results:** A total of Fifty ANC patients having various skin changes of pregnancy or specific pregnancy dermatoses were included in our study. Out of total Fifty patients studied, Thirteen cases were of linea nigra, Twelve cases of striae gravidarum, Ten cases of chloasma, Six cases of pruritic urticarial papules and plaques of pregnancy (PUPPP), Five cases of pruritic folliculitis of pregnancy (PF), Two cases of prurigo of pregnancy (PP), One case of pemphigoid gestationis (PG), and One case of vasculitis in pregnancy. All were subjected to dermoscopy which demonstrated various different dermoscopic patterns.

**Conclusion:** Dermoscopy may be very useful noninvasive tool in diagnosing various pregnancy dermatoses. Further studies on larger groups of patients are needed to confirm our dermoscopic findings.

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INTRODUCTION

Cutaneous findings in pregnancy can be separated into physiologic changes, cutaneous alterations that are aggravated or improved during pregnancy.<sup>[1]</sup> Interactions of hormonal factors with immune system pay important role in the pathogenesis of skin diseases to pregnancy. Timing of onset of many pregnancy-specific skin diseases may be correlated to hormonal changes that occur during pregnancy and particularly during the third trimester.<sup>[2]</sup>

Physiological pigmentary skin changes in pregnancy are Linea nigra, Striae gravidarum, Chloasma, Secondary areola. Vascular skin changes in pregnancy are Spider angiomas, Telangiectasias, Hemangiomas, Varicosities and Flushing. Specific dermatoses to pregnancy are like, Pruritic urticarial papules and plaques of pregnancy (PUPPP), Prurigo of pregnancy (PP) and Pruritic folliculitis of pregnancy (PF), Pemphigoid gestationis (PG). Many pregnancy dermatoses may be mistakenly diagnosed or may mimic other skin conditions.

Dermoscopy is a rapid, repeatable, recordable, non-invasive, bed side investigation and is a valuable tool in clinical dermatology for diagnosis and monitoring of skin diseases. Its utility has now been extended to pigmentary and inflammatory disorders.<sup>[3][4]</sup>

Aims and Objectives

1. To highlight dermoscopic features of various skin changes in pregnancy and its clinical correlation.
2. To differentiate other dermatological entities which mimic skin changes in pregnancy.

MATERIALS AND METHODS

This is a prospective observational study in which ANC patients having different skin changes of pregnancy and specific pregnancy dermatoses were included and dermatoscopy was done. The study was done in dermatology OPD of a tertiary care hospital in South India for a period of two years from July 2019 to June 2021. Patients attending to dermatology OPD were enrolled in the study. Patient consent

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was taken for clinical photographs and dermoscopic evaluation.

Dermoscopy was performed by dermatologist using a hand held Dermalite II Hybrid M dermatoscope at 10X magnification in a polarized contact mode and photographs were captured using an Apple iPhone 7.

Clinical findings were correlated with the characteristic dermoscopic findings.

## RESULTS

A total of 50 ANC patients those having various skin changes in pregnancy and specific pregnancy dermatoses, attending the dermatology OPD during study period were enrolled. Study patients were of Indian ethnicity with Fitz Patrick skin type IV to VI. Average age was 23 to 28 years.

Out of total Fifty cases studied, thirteen cases were of Linea Nigra, twelve cases of Striae gravidarum, ten cases of Chloasma, six cases of Pruritic urticarial papules and plaques of pregnancy (PUPPP), five cases of Pruritic folliculitis of pregnancy (PF), two cases of Prurigo of pregnancy (PP), one case of Pemphigoid Gestationis (PG) and one case of Vasculitis in pregnancy.

*Chart 1 shows the distribution of cases studied.*

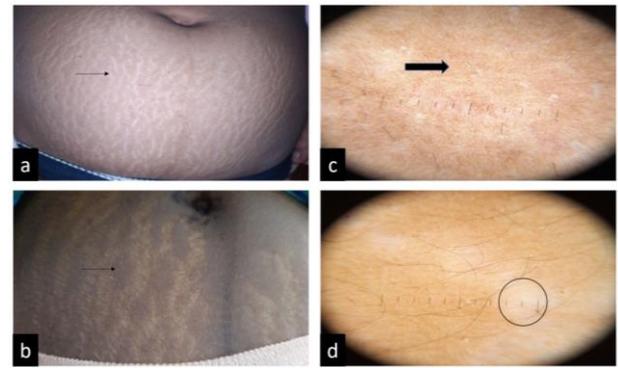
All skin lesions were clinically diagnosed and were subjected to dermoscopic evaluation. Dermoscopic patterns were observed and were clinically correlated.

Patients with Linea nigra clinically presented as vertical band of hyperpigmentation extending from Xiphoid Process to pubic symphysis. [Figure 1(a) and (b)] Dermoscopy performed over the hyperpigmented area of linea nigra demonstrated vertical band of dense reticular pigmented network with yellowish orange background and structureless white dots [Figure 1(c) and (d)]



**Figure 1** Linea Nigra; (a) and (b) clinical pictures showing vertical band of hyperpigmentation extending from xiphisternum to pubic symphysis (thin black arrow), (c) Dermoscopic picture showing vertical band of reticular pigment network (thick black arrow) with yellowish orange background, (d) Dermoscopic picture showing structureless white dots (black circle).

Patients with Striae Gravidarum presented with violaceous streaks and linear depressions with fine wrinkles and hypopigmentation over abdomen and periumbilical area. [Figure 2(a) and (b)] Dermoscopy performed demonstrated granular pigment network with adjacent patchy whitish hypopigmentation. [Figure 2(c) and (d)].



**Figure 2** Striae Gravidarum; (a) and (b) clinical pictures showing violaceous streaks and linear depressions with fine wrinkles (thin black arrow), (c) Dermoscopic picture showing granular pigment network (thick black arrow), (d) Dermoscopic picture showing patchy whitish hypopigmentation (black circle).

Patients with Chloasma clinically presented as ill-defined hyperpigmented macular patches over the cheeks, forehead and nose. [Figure 3(a) and (b)] Dermoscopy performed demonstrated globules of pigmented areas arranged in reticular or net like fashion known as reticuloglobular pattern. [Figure 3(c) and (d)]



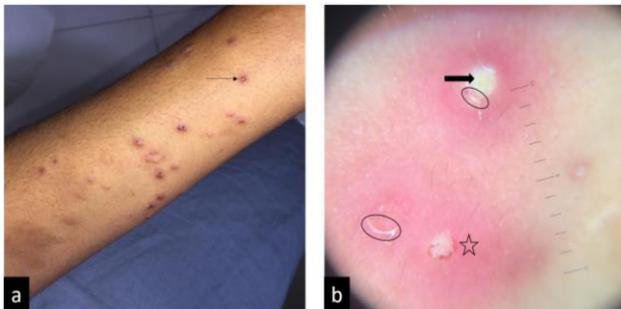
**Figure 3** Chloasma; (a) and (b) clinical pictures showing ill-defined hyperpigmented macular patches over cheeks, forehead and nose (thin black arrow) (c) and (d) Dermoscopic picture showing reticuloglobular pattern (black circle).

Patients with Pruritic urticarial papules and plaques of pregnancy (PUPPP) clinically presented with multiple, erythematous, pruritic urticarial papules coalescing to form plaques over the abdomen sparing periumbilical area and spreading to legs. [Figure 4(a) and (b)] Dermoscopy performed on PUPPP demonstrated giant capillary loops & red colored globules of hemorrhage at periphery showing centrifugal pattern with perifollicular clearing. [Figure 4(c) and (d)]

Patients with Pruritic folliculitis of pregnancy (PF) clinically presented with multiple, erythematous, pruritic follicular papules and few sterile pustules over extremities. [Figure 5(a)] Dermoscopy done on pruritic folliculitis of pregnancy demonstrated orange background, central yellowish pustular area surrounded by thin whitish halo with annular scaling edge processing in outward direction and peripheral homogenous erythema. [Figure 5(b)]

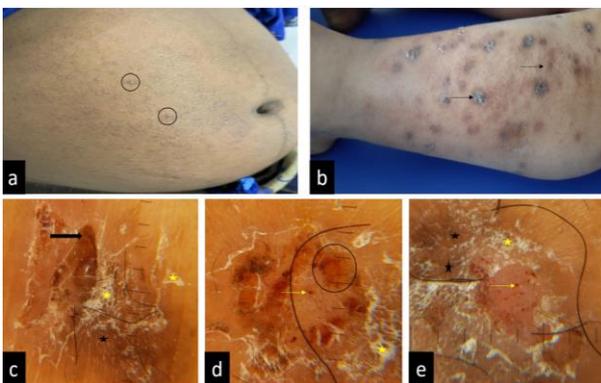


**Figure 4** PUPPP; (a) and (b) clinical pictures showing multiple, erythematous, pruritic urticarial papules coalescing to form plaques over abdomen (thin downward black arrow) sparing periumbilical area (thick downward black arrow) and spreading to legs. (c) and (d) Dermoscopic pictures showing giant capillary loops (thick black arrow) and red colored globules of hemorrhage at periphery (black circle) with perifollicular clearing.



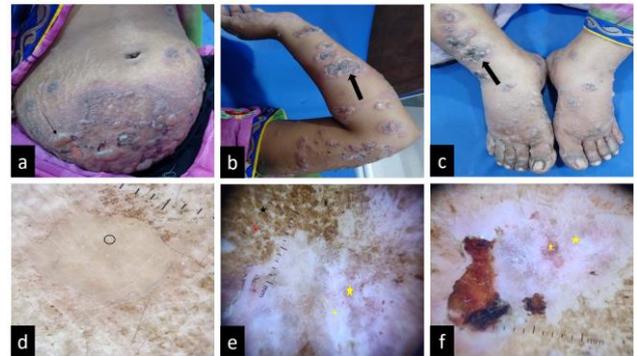
**Figure 5** PP; (a) clinical picture showing multiple, erythematous, pruritic follicular papules over extremities (thin black arrow). (b) Dermoscopic picture showing central yellowish pustular area (thick black arrow) surrounded by thin whitish halo with annular scaling edge processing in outward direction (black oval) and peripheral homogenous erythema (black star)

Patients with Prurigo of pregnancy (PP) clinically presented with multiple, groups excoriated papules also known as pickers nodules present over abdomen sparing periumbilical area & multiple excoriated papules few with central crust and healing with post inflammatory hyperpigmentation (PIH) predominantly present over the extensor surfaces of the limbs. [Figure 6(a) and (b)] Dermoscopy of PP showed white starburst pattern, reddish brown crust, white scales, brownish striations, adherent fibric fibre, bushy capillaries, at periphery and red dots, globules and hemorrhagic spots in centre. [Figure 6(c). (d) and (e)]



**Figure 6** PP; (a) and (b) clinical pictures showing multiple, grouped, excoriated papules i.e. pickers nodules (black circle) over abdomen sparing periumbilical and multiple excoriated papules few with central crust and healing with PIH seen on extensor surface of leg (thin black arrow). (c), (d) and (e) Dermoscopic pictures showing white starburst pattern, reddish brown crust (thick black arrow), white scales (yellow stars), brownish striations, adherent fibric fibre (black stars), bushy capillaries (circle), at periphery and red dots, globules and hemorrhagic spots (yellow arrows)

Patient with Pemphigoid gestationis (PG) clinically presented with multiple intensely pruritic urticarial papules, annular plaques and erythematous targetoid lesions present over extremities followed by multiple, clear fluid filled tense, vesiculobullous lesions present over abdomen and extremities. [Figure 7(a), (b) and (c)]. Dermoscopy of bulla of pemphigoid gestationis showed central well-defined area with central brown black dots while dermoscopy of erosions showed, patchy hypopigmentation with loss of pigment network giving “ground glass appearance” dotted vessels, disrupted pigment network, focal white areas and vaguely arranged telangiectatic vessels giving a starry appearance. [Figure 7(d), (e) and (f)] Patient with vasculitis in pregnancy clinically presented with diffuse, ill-defined ecchymotic rash extending from ankle to dorsum of foot and severe pallor on nails. [Figure 8(a)]. Dermoscopy performed demonstrated compactly arranged red dots, globules and hemorrhagic spots. [Figure 8(b)]



**Figure 7** PG; (a), (b) and (c) clinical pictures showing multiple, clear fluid filled tense, vesiculobullous lesions present over abdomen (thin black arrow), multiple intensely pruritic urticarial papules, annular plaques and erythematous targetoid lesions present over extremities (thick black arrow). (d), (e), and (f) Dermoscopic pictures showing central well-defined area with loss of pigment network giving “ground glass appearance” with brown black dots in center (black circle), patchy hypopigmentation (yellow arrow), vaguely arranged telangiectatic dotted vessels, (yellow star), disturbed pigment network (black star) and focal white areas (red star) giving starry appearance.

Clinical and dermoscopic findings are summarized in Table 1.

**Table 1** Clinical and Dermoscopic correlation of various skin changes in pregnancy

Pregnancy Dermatoses	Clinical Findings	Dermoscopic Findings
Linea Nigra	Vertical band of brown to black hyperpigmentation extending from xiphoid process to pubic symphysis.	Band of dense reticular pigmented network with yellowish orange background and structureless white dots.
Striae Gravidarum	Violaceous streaks and linear depressions with fine wrinkles and hypopigmentation over abdomen and periumbilical area.	Granular pigment network with adjacent patchy whitish hypopigmentation.
Chloasma	Ill-defined hyperpigmented macular patches over the cheeks, forehead and nose.	Globules of pigmented areas arranged in reticular or net like fashion known as reticuloglobular pattern.
Pruritic urticarial papules & plaques of Pregnancy (PUPPP)	Multiple, erythematous, pruritic urticarial papules coalescing to form plaques over the abdomen sparing periumbilical area and spreading to legs.	Giant capillary loops & red colored globules of hemorrhage at periphery showing centrifugal pattern with central clearing.
Pruritic Folliculitis of Pregnancy	Multiple, erythematous, pruritic follicular papules and few sterile pustules	Orange background, central yellowish pustular area surrounded by thin whitish

(PF)	over extremities.	halo with annular scaling edge processing in outward direction and peripheral homogenous erythema.
Prurigo of Pregnancy (PP)	Multiple, grouped, excoriated papules (picker's nodules) over abdomen, few with central crust and healing with PIH predominantly present over the extensor surfaces of the limbs and trunk.	White starburst pattern, reddish brown crust, white scales, brownish striations, adherent fibric fibre, bushy capillaries, at periphery and red dots, globules and hemorrhagic spots in centre.
Pemphigoid Gestationis (PG)	Multiple intensely pruritic urticarial papules, annular plaques and erythematous targetoid lesions present over extremities followed by multiple, clear fluid filled tense, vesiculobullous lesions present over abdomen and extremities.	Central well-defined area with central, with loss of pigment network, brown black dots in center giving ground glass appearance. Patchy hypopigmentation, dotted vessels, disrupted pigment network, focal white areas and vaguely arranged telangiectatic vessels giving starry appearance.
Vasculitis	Diffuse, illdefined ecchymotic rash extending from ankle to dorsum of foot and severe pallor on nails.	Compactly arranged red dots, globules and hemorrhagic spots.

dotted vessels and irregular haemorrhagic spots. It is well-known that orange colour on dermoscopy is due to either granulomatous inflammation or dermal hemosiderin deposition.<sup>[13]</sup>

In PP we see adherent fibric fibre which is also seen in prurigo nodularis and this sign helps to differentiate PP from lichen simplex chronicus.<sup>[14]</sup>

Purple red dots or pink globules corresponding to extravasated erythrocytes in the dermis, often on orange brown background corresponding to dermal hemosiderin deposits, are highly indicative of urticarial vasculitis as their presence in common urticaria is very rare.<sup>[15,16,17]</sup>

## CONCLUSION

Dermoscopy is a useful, non-invasive, bed side test for diagnosis of various pregnancy related dermatological skin conditions. Dermoscopy and its clinical correlation of various pregnancy related skin changes and specific dermatoses of pregnancy was done in this study. Dermoscopy will be useful tool for diagnosis and to differentiate various pregnancy dermatoses from other similar skin conditions. Furthermore, studies on larger groups of patients are needed to confirm our dermoscopic findings.

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Nil

## Conflicts of interest

There are no conflicts of interest.

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## DISCUSSION

Dermoscopy helps in diagnosis of various physiological and pathological skin conditions by demonstrating a characteristic pattern. In our study we have covered various pregnancy dermatoses so that it becomes easy to differentiate it from other similar skin conditions.

The findings in a study on skin changes in pregnancy by Kumari R *et al* corresponds to our study where pigmentary changes were the most common physiological changes seen in gravid females.<sup>[5]</sup> The most common pigmentary change observed during pregnancy is a darkening of linea alba to form linea nigra, a vertical band of pigment that may extend from the xiphoid process to the pubic symphysis.<sup>[6]</sup> About 90% of pregnant women develop striae over the lower abdomen by third trimester.<sup>[7]</sup>

Chloasma and Lichen planus pigmentosus (LPP) may present as hyperpigmentation on face. Dermoscopy may be used to differentiate them where dermoscopy of LPP shows dots and globules densely arranged in diffuse, dotted, annular, hem like patterns where annular and arcuate arrangement of globules gives reticular or pseudo reticular patterns.<sup>[8,9]</sup> Dermoscopy of exogenous ochronosis demonstrates grayish brown dark structures in curvilinear and worm like appearance, white scales with telangiectasia.<sup>[10]</sup>

PUPPP is the most specific dermatoses of pregnancy, affecting an estimated 1 in 160 births.<sup>[11]</sup> In preblistering stage, it is challenging to distinguish PG from PUPPP, which it can mimic, both clinically and histologically. Periumbilical area is usually spared in PUPPP and is not spared in PG. On dermoscopy PUPPP shows giant capillary loops & red colored globules of hemorrhage at periphery showing centrifugal pattern with central clearing.

The main challenging differential diagnoses of PFP include microbial folliculitis, prurigo lesions (due to atopy or cholestasis), and the initial (papular) stage of pruritic urticarial papules and plaques of pregnancy (PUPPP)<sup>[12]</sup> Most papules of PFP showed a central yellowish orange hue with some

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