



Original Research Article

Cutaneous changes in pregnancy: A comprehensive study of 700 cases at a tertiary care centre from South India



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ABSTRACT

Introduction: Pregnancy is associated with many skin changes, due to profound immunologic, metabolic, endocrine and vascular changes occur during pregnancy. Though most of which are physiological in nature, there can be changes in pre-existing skin diseases or develop new pregnancy specific dermatoses which can cause distress to pregnant female and may influence the fetal outcome as well.

Aims: To study the frequency and pattern of skin changes in pregnant women.

Study Design: Prospective cross sectional study in a tertiary care centre

Materials and Methods: After obtaining institutional ethical committee approval, a prospective cross-sectional study carried out in the outpatient department of obstetrics and gynaecology and Skin, Cheluvamba and KR Hospital, Mysuru. A total of 700 pregnant females were screened for physiological skin changes, associated dermatological diseases and specific dermatoses of pregnancy.

Statistical analysis used: M S word

Results: A total of 700 pregnant women were included in the study, of which 309(44.1%) were primigravida and 391(55.9%) were multigravida. Physiological skin changes were seen in all cases, out of which Linea nigra was the most common change seen in 610(87.14%) cases, specific dermatoses of pregnancy (PSD) were seen in 58(8.28%) cases, out of which Atopic eczema of pregnancy (AEP) was the most common, seen in 36(62.06%) cases followed by pruritic urticarial papules and plaques of pregnancy (PUPPP), observed in 18(31.03%)cases and Intrahepatic cholestasis of pregnancy (ICP) was seen in 4(6.89%) cases and among other concomitant dermatological disorders fungal infection was the most common seen in 72 cases (10.28%).

Conclusions: Many skin changes occur during pregnancy are physiological require no treatment. Pregnancy specific dermatoses are not very rare, few PSDs have impact on pregnancy and fetal outcome, likely to recur in subsequent pregnancy, require thorough examination and specific diagnosis to counsel and manage accordingly.

KeyMessages: Few pregnancy specific dermatoses have severe impact on pregnancy and fetus. Hence we suggest the requirement of thorough knowledge about pregnancy dermatoses, a comprehensive clinical examination and investigations to arrive at specific diagnosis which is a mandate for counselling and management.

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1. Introduction

Pregnancy is a physiologic state characterized by profound metabolic, endocrine and vascular changes, range from normal cutaneous changes that occur with almost all

pregnancies, to common diseases that are not associated with pregnancy, to eruptions that appear to be specifically associated with pregnancy¹

Cutaneous changes develop in more than 90% of all pregnant females.² Cutaneous manifestations of pregnancy can be broadly classified into three categories: Physiological cutaneous changes related to pregnancy, diseases modified

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by pregnancy and Specific dermatoses of pregnancy.³

The most recent and rationalized classification of pregnancy specific dermatoses (PSD) was proposed by Ambrose — Rudolph et al in 2006, which included atopic eruption of pregnancy, polymorphic eruption of pregnancy, pemphigoid gestationis and intrahepatic cholestasis of pregnancy.⁴

2. Materials and Methods

After obtaining institutional ethical committee approval, the study was conducted in the outpatient department of Cheluvamba and KR Hospital, Mysuru over a period of one year from Jan 2018 to Dec 2018 after taking informed consent.

A total of 700 cases were included in the study. A detailed history including demographic data, parity, duration of pregnancy, presence of itching, jaundice, atopy, similar complaints in the previous pregnancies, family history, associated medical and skin disorders were elicited.

General physical examination, systemic and complete cutaneous examination was done for all cases.

The physiological changes of skin were noted. In patients with pregnancy specific dermatoses, the morphology, distribution and sites involved were recorded. The presence of any co-existing diseases developed during pregnancy was recorded. Routine investigations including complete hemogram, liver function test, renal function test, and urine examination were carried out. Screening for syphilis, HIV and hepatitis B was done for all cases. KOH, Gram's stain and skin biopsy was done where ever required.

3. Results

A total of 700 pregnant females attending our outpatient department were recruited, of which 309(44.1%) were primigravida and 391(55.9%) multigravida. Majority of them presented in third trimester 379(54.14%), followed by second trimester 256(36.57%) and 65(9.28%) cases in first trimester.

Physiological skin changes were seen in all cases, out of which Lineanigra was the most common seen in 610(87%) cases Figure 1, followed by secondary areola in 509(72.7%) cases Figure 2 and melasma was observed in 124(17.7%) cases. Other physiological changes observed during our study are as shown in Table 1 .

Pregnancy specific dermatoses were seen in 58(8.28%) cases. Among them atopic eruption of pregnancy was the most common condition seen in 36(62.06%) cases Figure 3 followed by PUPPP in 18 cases (31.03%) Figures 4 and 5, intrahepatic cholestasis of pregnancy in 4(6.89%) cases and no case of pemphigoid gestationis recorded in our study. Table 2

Among 36 cases of atopic eruption of pregnancy 20(55.55%) cases were primigravida and 16(44.44%) cases

were multigravida, 24(66.7%) cases reported in second trimester and 12(33.33%) cases in third trimester. History of atopy was present in 16(44.44%) cases and 15(41.66%) cases had similar skin lesions suggestive of AEP in the previous pregnancies. Upper and lower limbs were the common sites involved in 26(72%) cases and generalised skin lesions were seen in 10 cases (27.77%).

Out of 18 cases of PUPPP, 14(78%) cases were primigravida and 4(22%) cases were multigravida, and 15(83.3%) cases reported in third trimester and 3(16.66%) cases in second trimester. All cases had skin lesions over abdomen with erythematous urticarial papules and plaques with typical sparing of periumbilical area, many cases showed Papulo -vesicular lesions on striae. Similar skin lesions were also seen over upper and lower limbs in 7 cases. One patient had pre-eclamptic toxemia. No multiple pregnancy was seen. None of them had similar lesions in past pregnancies.

Out of 4 ICP cases, 3 were multigravida and 1 was primigravida, 3 of them presented in third trimester and one in second trimester. Two of them had similar complaint in previous pregnancy. All 4 cases presented with intense pruritus with few excoriations over extremities and abdomen.

Other concomitant dermatological diseases were seen in 143(20.42%) cases out of 700 cases registered, infection was the most common condition, noted in 108(15%) cases, among them fungal infection was seen in 72(10.28%) cases. Six sexually transmitted infections were recorded, out of which 3 were syphilis, and one each chancroid, condyloma acuminata and genital molluscum contagiosum. One case of Sweet's syndrome was recorded during pregnancy in our study Figure 6. Other dermatoses are as shown in Table 3.

Table 1: Physiological skin changes

S. No	Physiological skin changes	Number of cases (percentage)
1.	Linea nigra	610(87%)
2.	Secondary areola	509(72.71%)
3.	Melasma	124(17.7%)
4.	Striae distensae	490 (70%)

Table 2: Pregnancy specific Dermatoses

S. No	Pregnancy specific dermatoses	Number of cases (Percentage)
1.	Atopic eczema of pregnancy (AEP)	36(62.06%)
2.	PUPPP	18(31.03%)
3.	Intrahepatic cholestasis of Pregnancy (ICP)	4(6.9%)
4.	Total	58(8.28%)

Table 3: Associated skin conditions.

Associated skin conditions	Number of cases (Percentage)
Infections	
Viral-	11(1.57%)
Varicella-3	
Wart-3	
viral exanthema-4	
Molluscum contagiosum-1	
Bacterial :	5(0.7%)
Furuncle-4	
Folliculitis-1	
Fungal infection	72(10.28%)
Scabies	14(2%)
Sexually transmitted infections	6(0.85%)
Syphilis-3	
Chancroid-1	
Condyloma acuminata-1	
Genital molluscum contagiosum-1	
Others	35(5%)
Urticaria-9	
Miliaria-9	
Acne-5	
Acanthosis nigricans-2	
Ichthyoses-2	
Vulvovaginitis-4	
Psoriasis and vitiligo-1each	
Sweets syndrome-1	
Erythema multiforme-1	

**Fig. 2:** Secondary areola**Fig. 3:** Atopic eczema of pregnancy showing, excoriations, oozing and eczematous lesions over lower limbs.**Fig. 1:** Linea nigra

4. Discussion

Pregnancy is associated with many significant skin changes ranges from physiological skin changes to common skin diseases concomitantly occur during pregnancy to conditions exclusively seen during pregnancy and post partum period.

Physiological skin changes may be seen in all pregnant females.⁵ In our study physiological skin changes are seen in all cases, the most common was Linea nigra observed in 87%, followed by secondary areola seen in 72.71% of cases, comparable to study by Kumari et al² reported Linea nigra in 91.4% and secondary areola in 78.4% and Hassan et al⁵ reported 80% of Linea nigra and 75% of secondary areola. Melasma occurrence during pregnancy is variable from 2.5 to 75%^{2,5,6} in our study melasma was seen in 17.71% of cases, centrofacial was the most common type recorded in 70%. Majority of Indian studies, by Rashmi et al² (2.5%) and Raj et al⁵ (8.5%) have reported lower incidence. Striae distensae developed in 90% of women during 6th and 7th month of pregnancy.¹ In our study striae was seen in 70% of cases and 69% were multigravida and 31% of primigravida,



Fig. 4: PUPPP showing erythematous papules and urticarial lesions over striae on abdomen with sparing of peri -umbilical region.



Fig. 5: Showing, erythema and urticaria with papules and plaques over thighs.



Fig. 6: Sweets syndrome showing erythematous, edematous plaques with pseudovesicles on face.

majority of them noticed during second and third trimester and lower abdomen was the most common site affected.

The pregnancy specific dermatoses (PSD) represent a heterogeneous group of severely pruritic inflammatory dermatoses associated exclusively with pregnancy and the immediate postpartum period.

The incidence of PSD ranges from 0.5 to 13%.^{7,8} the most recent and rationalized classification was proposed by Ambros -Rudolph et al in 2006⁴ they introduced a new entity “Atopic eruption of pregnancy ” (AEP), included all three conditions – eczema of pregnancy, prurigo of pregnancy and pruritic folliculitis of pregnancy under AEP and they observed that AEP was the most common and noted in 50% of PSDs. They proposed four main PSDs – Atopic eruption of pregnancy, polymorphic eruption of pregnancy, pemphigoid gestationis and intrahepatic cholestasis of pregnancy.

In our study of 700 cases, PSDs were seen in 58(8.28%) cases, in comparison with study by Dabette et al⁸ reported 13%.

Among them, AEP was the commonest in our study, observed in 36(62%) cases out of 58, similar to the study by Das et al⁹ reported 68.4% of AEP but very low incidence of 14% reported by Puri and Puri et al.¹⁰ It is the most common PSD, tends to recur in subsequent pregnancies, 75% of them occur before third trimester. It carries no risk for mother or baby. The eruptions may last for three months after delivery.¹¹

Polymorphic eruption of pregnancy (PEP) or pruritic urticarial plaques and papules of pregnancy (PUPPP) was

seen in 18(31.03%) cases out of 58 PSDs in our study, the second most common PSD. Its occurrence ranges from 15 to 63.6%.^{2,4,5,9} One Indian study has reported PUPPP as the most common PSD with 63.6%.² It occurs classically in primigravida during third trimester or occasionally post partum and does not usually recur in subsequent pregnancies. The incidence of PUPPP is higher in multiple pregnancy, there are no associated maternal or foetal complications.¹⁰

Intrahepatic cholestasis of pregnancy (ICP), is a reversible form of hormonally triggered cholestasis in genetically predisposed individuals in late pregnancy. It runs in families and tends to recur in subsequent pregnancies (45-70%). There is a defect in the excretion of bile salt resulting in elevated bile acids in the serum, leads to severe pruritus in mother and toxic bile acids can enter foetal circulation and can cause high risk of premature delivery, meconium stained amniotic fluid and intrauterine demise due to anoxia caused by decreased fetal elimination of toxic bile acids.¹² Clinically present with sudden onset of pruritus with excoriations to severe prurigo usually involving extremities and abdomen.

ICP was observed in 4 cases in our study, 3 cases reported in third trimester and 2 cases gave similar complaints in previous pregnancy. No foetal complication was seen.

Pemphigoid gestationis is a rare, self-limited autoimmune bullous disorder present mainly in late pregnancy or immediate postpartum period. The circulating compliment fixing IgG antibodies bind to BP-180 or bullous pemphigoid antigen 2 in the hemidesmosome of the dermoepidermal junction (DEJ) leading to tissue damage and blister formation.¹³ It presents with intense pruritus that occasionally precede the skin lesions. Initially, erythematous urticarial papules and plaques typically develops on the abdomen, characteristically involving the umbilical region, later progress to tense blister resemble those in bullous pemphigoid.¹⁴ Histopathology reveals subepidermal blister located in lamina lucida of Dermoepidermal junction (DEJ). Direct immunofluorescence shows linear C3 deposition along DEJ in 100% of cases and additional deposition of IgG.¹⁴ No cases of pemphigoid gestationis was reported in our study.

Among concomitant dermatological disorders, fungal infection was the most common.

5. Conclusion

Though many skin changes which occur during pregnancy are physiological, patients do become panic after noticing skin lesions like pigmentary changes, striae, vascular and hair changes. Hence they need a proper counselling about its physiological nature. Pregnancy specific dermatoses are not very rare, few PSDs like ICP have severe impact on pregnancy which is known for recurrence and has got a poor outcome on pregnancy and fetus. Hence we suggest the requirement of thorough knowledge about pregnancy

dermatoses, a comprehensive clinical examination and investigations to arrive at specific diagnosis which is a mandate for counselling and management.

6. Source of Funding

None.

7. Conflict of Interest

None.

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