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Original Research Article

A study of dermatoses in antenatal patients attending tertiary care centre

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ABSTRACT

Background: Pregnancy produces many cutaneous changes which can be either physiological, alteration in pre-existing skin diseases or development of dermatoses which are specific to pregnancy which occur due to the production of a number of proteins and steroid hormones by the fetoplacental unit and maternal pituitary, thyroid and adrenals. Patient's concern may range from cosmetic appearance to potential effects on mother and fetus. Aims and objectives: Study was undertaken to observe physiological and pathological skin changes in different gravidae and trimesters of pregnancy.
Methods: A cross sectional study performed after institutional ethics committee clearance. Total 205 pregnant females were enrolled in study by simple random sampling. Complete history, clinical examination and relevant investigations were done. Patients were treated accordingly. Data was analysed by application of descriptive analysis, Mean and SD.
Results: In physiological changes, linea nigra was the most common, followed by striae distensae. Pigmentary changes were found more commonly in 2nd trimester while vascular and structural changes were commoner in 3rd trimester. In dermatoses affected by pregnancy, fungal infection was most common followed by viral infections and acne which were most commonly seen in 2nd trimester. Polymorphic eruption of pregnancy was most common among pregnancy specific dermatoses followed by pruritus gravidarum which were more commonly noted in the 3rd trimester. Atopic eruption of pregnancy was common in 2nd trimester. As study was cross sectional, disease progression and treatment outcome could not be observed.
Conclusions: Cutaneous lesions may range from common, benign changes termed physiological or more severe, posing significant risk to mother and child. Timely diagnosis and prompt treatment is essential for improving maternal and fetal well-being and prognosis and to minimize their morbidity.

Keywords: Pregnancy dermatoses, Antenatal females, Cutaneous lesions

INTRODUCTION

Pregnancy is a physiological state associated with immunologic, metabolic, endocrine and vascular changes, which make pregnant women susceptible to changes of skin and its appendages.[1] Skin changes in pregnancy can be in form of either physiological (hormonal), alteration in pre-existing skin diseases or development of the dermatoses which are specific to pregnancy.[2] Skin manifestations occur due to the production of a number of proteins and steroid hormones by the fetoplacental unit and also by the maternal pituitary, thyroid and adrenals.[3] The placenta, a new endocrine organ in the women, produce progesterone. Dehydroepiandrosterone is produced by the fetal adrenals from pregnenolone and this is aromatized to estriol. At term, the level of progesterone is 7 times, estradiol is 130 times and prolactin level are 19 times of that present at 8 weeks of

gestation.[4] There occurs an overall preference for the Th2 cytokine profile, which helps in fetal protection from the immune system. This is due to the high levels of progesterone, which promotes Th2 cytokines like IL-4, IL-5 and IL-10 and has inhibitory effects on TNF alpha production. Oestrogen suppresses IL-2 production. The postpartum period is marked by withdrawal of hormones and consequent elevation of Th1 cytokine levels.[5] The concern of the patient may range from cosmetic appearance to the chance of recurrence of the problem during a subsequent pregnancy; also, the potential effects of these dermatoses on foetus in terms of morbidity and mortality. The pregnant woman is vulnerable not only to all the dermatoses occurring in the non-pregnant state but also an heir to certain eruptions related to the physiologic burden of gestation. Physiological changes can be in form of pigmentary, vascular, structural and glandular changes. Pre-existing skin changes can show modification like bacterial infection, viral infection, fungal infection, acne, autoimmune disorders etc. Specific dermatoses of pregnancy are pemphigoid gestationis, polymorphic eruption of pregnancy (PEP) (pruritic urticarial papules and plaques of pregnancy-PUPPP), Intrahepatic cholestasis of pregnancy (pruritus/prurigo gravidarum) and atopic eruption of pregnancy (AEP).[6] However, most skin eruptions resolve postpartum and require only symptomatic treatment but it can be a source of significant distress to pregnant female.[7] Few can cause fetal complications. So overall skin changes in pregnancy need timely therapeutic intervention and reassurance.[8] Knowledge of these conditions is important to forewarn the patient and to prepare for upcoming complications. This study is designed to know various types of pregnancy dermatoses and their prevalence in pregnant women at tertiary care centre of South Gujarat.

Aim of the study was to study various types of dermatoses and their association in antenatal patients.

METHODS

Hospital based cross sectional, observational study of 205 pregnant females fulfilling inclusion criteria was done by the department of dermatology, venereology and leprosy of SMIMER, Surat from November 2017 to July 2019 after ethics committee approval. Pregnant women not willing to participate in the study were excluded. Patients were included in the study by simple random sampling after informed written consent. Confidentiality of all records was maintained. Detailed history was noted in each patient. Complete cutaneous examination of skin lesions including morphology, distribution and sites involved, with relevant systemic examination was performed. Blood investigations were carried out as per the standard recommended evaluation, which included CBC, RBS, LFT, RFT and Urine routine micro examination. Skin biopsy and other relevant investigations were carried out as and when required. Bedside laboratory procedures like Tzanck smear, KOH mount and Gram's stain were carried out when required. Images of the selected lesions were taken by digital camera after obtaining consent. Appropriate treatment was given in all patients depending upon types and site of lesion. Data was analyzed by application of descriptive analysis, mean and SD.

RESULTS

A total of 205 cases of antenatal patients who presented to our OPD and satisfied the inclusion and exclusion criteria in the study duration were analysed in this study. Maximum number of patients is in 21-25 years of age group in our study as shown in Table 1. Majority patients were found to be presented in the 3rd trimester (96 females-46.83%) followed by 2nd trimester (77 that is 37.56%) and 1st trimester (32 females-15.61%). Most common gravidational state of the patients presented with dermatological manifestations was primigravidae (43.90%), followed by 2nd (33.66%), 3rd (12.20%), 4th (6.34%), 5th (3.41%) and 6th (0.49%) gravida.

Table 1: Distribution of patients according to age group.

Age group (years)	No. of patient	Percentage (%)
16-20	32	15.61
21-25	109	53.17
26-30	50	24.39
31-35	12	5.85
36-40	2	0.98
Total	205	100

Among physiological changes, the most common was pigmentary changes (linea nigra) seen in 91.71% patients, followed by structural changes (striae distansae) seen in 85.85% patients. Other changes were vascular and glandular. These findings are mentioned in Table 2. Majority patients with physiological skin changes presented in 3rd trimester (174) followed by 2nd trimester (169) as shown in Table 3. Many females were having more than one changes simultaneously. The table also elaborated that pigmentary changes were more commonly found in 2nd trimester, while all other changes like structural, vascular were noticed more in 3rd trimester. Multigravidae females had more physiological changes than the primigravidae, commonly having pigmentary changes (in 188 females), followed by structural (in 176 females), vascular (in 29 females) and glandular (in 1 female) changes. In primigravidae striae appears pinkish colored while in multigravida it is commonly whitish colored. Melasma was found in 8 females (5 with malar type and 3 with centro-facial type).

Among associated pathological skin changes, fungal infection was most commonly seen (in 19.02% females). Other pre-existing dermatoses were bacterial infection, viral infection, acne, eczema etc. (shown in Table 4). More number of females in 2nd trimester presented with changes in already existing skin diseases which is

mentioned in Figure-1. According to the gravidational state, multigravidae females presented with pathological skin changes more. Out of them, infectious diseases were more common (seen in 70.33% females) than non-infectious diseases (seen in 29.67% females). Among infectious diseases fungal infection was the most common. Out of total 20 patients of acne, 15 were having new onset of disease and 3 were showing worsening of pre-existing condition. Eczema and bacterial infection showed no change along the course of pregnancy. Most of the viral and fungal infections showed new onset of disease during pregnancy. Two females with pre-existing disease showed worsening of condition along with course of pregnancy. Among sexually transmitted infections, candidial vulvovaginitis was seen most commonly in 66.67%. (14 out of 21 cases). Other sexually transmitted infections noted were chancroid (2 cases), herpes genitalis (2 cases), condyloma lata (1 case), molluscum contagiosum (1 case) and genital warts (1 case).

Table 2: Distribution of physiological changes in pregnancy.

Physiological Changes	Observed manifestations	No. of patients	%
Pigmentary	Hyperpigmentation	3	1.46
	Linea nigra	188	91.71
	Melasma	8	3.90
Vascular	Varicosities	3	1.46
	Peripheral oedema	24	11.71
	Palmar erythema	2	0.98
Structural	Striae distance	176	85.85
Glandular	Miliaria	1	0.49

Table 3: Trimester wise distribution of physiological changes in pregnancy.

Physiological changes		Trimester			
		1	2	3	Total
Pigmentary	Hyper-pigmentation	0	3	0	
	Linea nigra	34	83	71	
	Melasma	1	5	2	
	Total	35	91	73	199
Vascular	Varicosities	0	2	1	
	Peripheral oedema	0	5	19	
	Palmar erythema	0	1	1	
	Total	0	8	21	29
Structural	Striae distensae	27	69	80	176
Glandular	Miliaria	0	1	0	1
Grand total (trimester wise)		62	169	174	405

Polymorphic eruptions of pregnancy were the most common pregnancy specific dermatoses seen in 26 (12.68%) patients, followed by pruritus gravidarum in 20 (9.76%) females, atopic eruptions of pregnancy in 5.85% and intrahepatic cholestasis of pregnancy in 0.98% females. Table 5 shows that 3rd trimester was the most common to be involved by pregnancy specific dermatoses (seen in 31 females) followed by 2nd trimester (seen in 23 females). Primigravidae females (34 out of 60) were having pregnancy specific dermatoses more commonly than multigravida females. 12 out of 60 females (20%) were having similar dermatological manifestation in previous pregnancy. PEP and pruritus gravidarum were seen most commonly in primigravida in 3rd trimester, while AEP was most common with multigravida seen in 2nd trimester (observations shown in Table 6). In AEP, 41.67% patients showed E type (eczematous) of distribution, while 58.33% patients showed P type (papules, prurigo) of distribution pattern.

Table 4: Distribution of pathological diseases of pregnant females.

Type of dermatological disease		No. of patient	Total	%
Acne	Acne	20	20	9.76
Eczema	Eczema	1	1	0.49
Bacterial infections	Chancroid	2	4	1.95
	Condyloma lata	1		
	Folliculitis	1		
Viral infections	H. labialis	2	21	10.2
	MC	1		
	Genital warts	1		
	Verruca vulgaris	1		
	H. zoster	5		
	H. genitalis	2		
	Chickenpox	9		
Fungal infections	Candidial vulvovaginitis	14	39	19.02
	Onychomycosis	1		
	Intertrigo	2		
	Tinea corporis and Tinea cruris	22		
Auto-immune disease	Lichen planus (LP)	1	2	0.98
	SLE	1		
PKD	PKD	3	3	1.46
Phrynoderma		1	1	0.49

Table 5: Trimester wise distribution of pregnancy specific dermatoses.

Pregnancy specific dermatoses	Trimester			Total
	1st	2nd	3rd	
PEP	3	8	15	26
AEP	3	7	2	12
ICP	0	1	1	2
Pruritus gravidarum	0	7	13	20
Pemphigoid gestations	0	0	0	0
Grand total (trimester wise)	6	23	31	60

Table 6: Distribution of pregnancy specific dermatoses with gravida and trimester.

Specific dermatoses	Primigravidae	Multigravidae	Trimester (most common)	Previously affected
PEP	20	6	3rd	3
AEP	2	10	2nd	4
ICP	1	1	-	1
Pruritus gravidarum	11	9	3rd	4

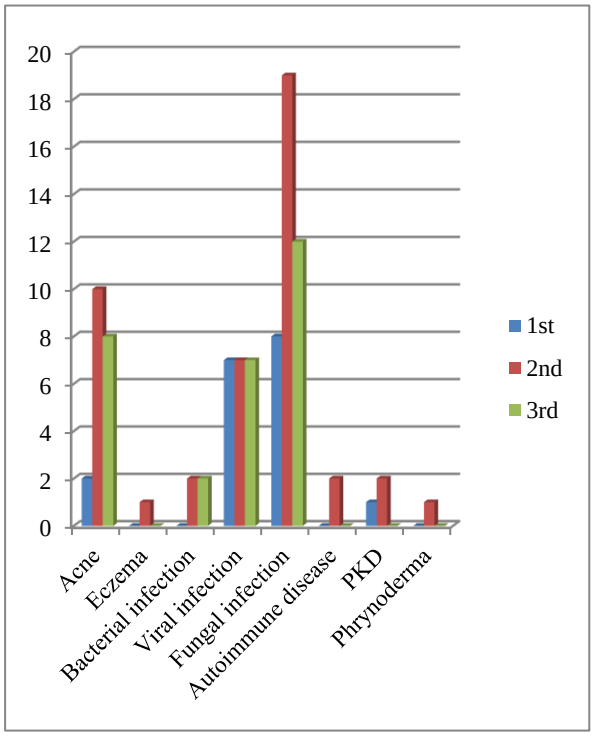

Figure 1: Trimester wise pathological disease distribution of pregnant females.

Figure 2: (A) Striae distansae seen as shiny linear atrophic band, (B) Candidial vulvovaginitis of curdy white discharge.

Figure 3: (A) Condyloma lata seen as soft moist pinkish flat-topped plaque, (B) Polymorphic eruptions of pregnancy seen as papules and plaques on striae with sparing of periumbilical region

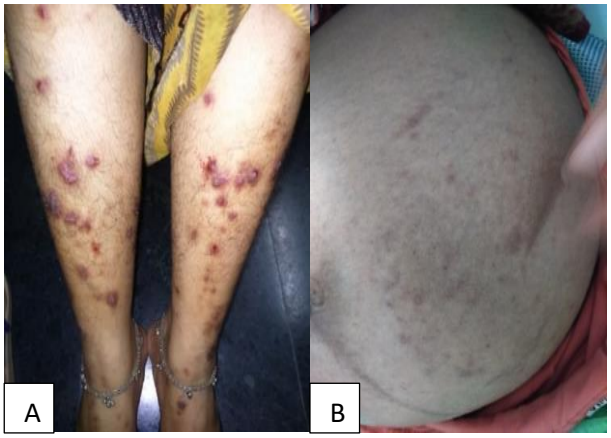

Figure 4: (A) Atopic eruption of pregnancy seen as hyperpigmented papulo-nodular lesions, (B) Multiple excoriation marks without lesions suggestive of pruritus gravidarum.

DISCUSSION

Study of total 205 antenatal females was done in tertiary care centre of Surat. In our study minimum age was 18 years and maximum age was 40 years. The most common

presenting age group of pregnant women with dermatological manifestations was 21-25 years, which was seen in 53.17% females, followed by 26-30 years group (24.39%), 16-20 years (15.61%), 31-35 years group (5.85%) and above 35 years (0.98%). Study done by Kumari et al had the most common age group of 18-36 years.[9]

In our study, 15.61% women belonged to 1st trimester, 37.56% women belonged to 2nd trimester and 46.83% women presented with 3rd trimester. In the study done by Shivakumar et al also, third trimester attendance was maximum, that is 105 cases (61.76%), followed by second trimester- 46 cases (27.5%) and first trimester-19 cases (11.17%).[10] Out of 205 patients 90 (43.90%) were primigravida and 115 (56.1%) were multigravida in present study. 43.90% women were present in gravida one, 33.66% women were in gravida two, 12.20% were in gravida three, 6.34% were in gravida four, 3.41% were in gravida five and 0.49% were in gravida six. Hence, majority of the cases were multigravidae. Shivakumar et al, on the contrary, reported almost an equal incidence of primigravida and multigravida, with 86 cases (50.58%) and 84 cases (49.41%) respectively.[10] In Kumari et al study, out of 607 patients 303 (49.9%) were primigravida and 304 (51.1%) were multi gravida showing equal incidence. [9]

In our study, the most common physiological change in pregnancy was linea nigra (91.71%) which was most commonly seen in 2nd trimester; followed by striae distansae (85.85%) most commonly seen in the 3rd trimester, peripheral oedema (11.71%) which was maximally seen in 3rd trimester. Oedema was decreased during the day and was thought to be due to secondary sodium and water retention in conjunction with increased capillary permeability. Overall physiological changes were most common in 3rd trimester (174 females), followed by 2nd trimester (169 females). Pigmentary change was the most common (seen in 199 females) which was noticed during 2nd trimester more. While structural and vascular changes were more commonly seen in 3rd trimester. Majority of them were multigravida. Similar findings were also noted in the study done by Kumari et al.[9] She mentioned the most common physiological change as pigmentary alterations seen in 555 (91.4%), followed by striae distensae, seen in 484 (70.7%) cases. While in the study done by Raj et al striae distensae was the most common found in 75 %.[11] Muzaffar et al found that 77.1% (108/140) of their cases developed striae distansae.[12]

The most common site involved in primigravidae of our study was lower abdomen, and pink shiny striae were most common among them. Multigravidae showed mostly white atrophic striae. While in study done by Shivanand et al, linea nigra was found in 270 cases (45%) which are less than found in our study.[13] Muzaffer et al found melasma to be present in 65 cases (46.4%) of their cases.[12] This is in contrast to our study where we observed only 8 cases of melasma, out of which 3 (37.5%) were of Centro facial pattern and 5 (62.5%) were of malar pattern, most common during 2nd trimester.

Among pathological dermatoses of pregnancy 64 patients (70.33%) were having diseases with infectious etiology while 27 (29.67%) were having non-infectious etiological diseases. In our study, most commonly found pathological disease is fungal infection (19.02%) which correlates with the study done by Shivanand et al who noted similar findings.[13] Second most common manifestation was viral infection (10.24%) followed by acne (9.76%). Acne and fungal infection were more common in 2nd trimester followed by 3rd trimester, and almost equally seen in primigravida and multigravida females. Viral infections were also associated in all trimesters with equal distribution. In a study by Rudolph CM, acne was found to be in 13% and in our study, it was 9.76%.[14] 10.24% females were having viral infection in our study, while study done by Ambros-Rudolph showed viral infection in 8% females, which was similar. [14] It was found that few cases of acne, fungal infection and viral infection were associated with worsening as the pregnancy proceeds. Most of them were having newer onset of the disease. Sexually transmitted infections were seen in 21 cases (23.08%). One patient with herpes genitalis was HIV reactive.

Specific dermatoses of pregnancy are most important entity of this spectrum of cutaneous manifestations of pregnancy. Most common specific dermatoses in pregnancy found was polymorphic eruption of pregnancy (12.68%) followed by pruritus gravidarum (9.76%). Both the conditions were found more commonly in 3rd trimester. Third most common manifestation was atopic eruption of pregnancy seen in 5.85% females which was observed more in 2nd trimester. In a study done by Shivanand et al, polymorphic eruption of pregnancy was the commonest specific dermatosis with 19 patients (10.55%) which was similar finding noted by present study.[13] Polymorphic eruption of pregnancy and pruritus gravidarum were more common with primigravida females, while atopic eruption of pregnancy was more common in multigravida. Two patients were having Intra-hepatic cholestasis of pregnancy with supportive laboratory investigations. The important feature of cholestasis is the absence of primary lesions such that excoriations are the only cutaneous finding. In our study we did not observe a case of pemphigoid gestationis. All of the specific dermatoses showed tendency of recurring in subsequent pregnancy.

CONCLUSION

Cutaneous manifestations in pregnancy consist of a broad spectrum of diseases. It is therefore important on the part of the dermatologist to diagnose these various cutaneous lesions. These may range from common, benign changes termed physiological or more severe, posing significant risk to mother as well as child. Physiological pregnancy

changes may be of cosmetic concern to patient and seldom need anything more than counselling. Pre-existing dermatoses may aggravate during this period, posing a challenge to the treating physician. Women suffering from such disease need to be warned of complications and appropriate management at an early stage is warranted. Specific dermatoses of pregnancy are a rare group of pruritic inflammatory dermatoses, specifically related to pregnancy and/or the immediate post-partum period. The importance of knowing these dermatoses lies in the fact that some of them (PG and ICP) are associated with fetal risks such as fetal distress, prematurity or stillbirth. Pruritus is the major symptom of this group of disease. Most of the times the mother is worried about the pregnancy outcome and hence having an overall perspective is necessary for the right diagnosis and counselling of the patient. The medical history and the morphologic criteria of the lesions can aid the clinician to establish the correct diagnosis. Clinicians need to distinguish between physiological skin changes and specific dermatoses of pregnancy for better patient management. So early diagnosis and prompt treatment is essential for improving maternal and fetal well-being and prognosis and to minimize their morbidity.

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