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Original Research Article

A study of pregnancy specific dermatoses and their effect on the outcome of pregnancy

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ABSTRACT

Background: Pregnancy being a complex state, the interactions of multiple factors result in a number of cutaneous findings that can be separated into physiologic changes, pre-existing dermatoses that can be aggravated or improved during pregnancy and dermatoses that are specific to pregnancy. Dermatoses specific to pregnancy are important to recognise because they may be pruritic or painful to the mother and may pose significant risk to mother, her fetus or both. Early identification of the condition may go a long way in preventing morbidity and mortality.
Methods: Antenatal women attending dermatology outpatient for dermatologic problems or referred from Obstetrics and Gynaecology, department for skin conditions in a tertiary care hospital in Kottayam, Kerala state were taken up for the study. Pregnancy related dermatoses or physiologic changes due to pregnancy if present were noted. The patients were followed up till delivery and the pregnancy outcome recorded. The results were analyzed using SPSS.
Results: 94.3% of the patients had physiological changes, hyperpigmentation being the commonest. Specific pregnancy dermatoses were present in 38.3%. 94% of pregnancy dermatoses occurred during third trimester. The most common specific dermatoses observed was pruritic urticarial papules and plaques of pregnancy (PUPPP)-63.6%. It is more common in primi gravida (30/42), in twin pregnancies, in mothers of babies with more birth weight, male babies and those with gestational diabetes mellitus. None of the specific dermatoses produced adverse fetal outcome.
Conclusions: Pregnancy dermatoses usually manifest in the third trimester. PUPPP is the commonest pregnancy dermatosis. PUPPP is more common among mothers with increased body weight, gestational diabetes, in twin pregnancy and in mothers with male babies. Most of the common pregnancy dermatoses have no adverse effect on the fetus.

Keywords: Pregnancy dermatoses, PUPPP

INTRODUCTION

Pregnancy is a complex state and interactions of multiple factors including genetic, hormonal and immunologic changes occurring during pregnancy result in various skin changes.[1] Interactions of hormonal factors with the immune system play a significant role in the pathogenesis of skin diseases specific to pregnancy.[2] The timing of many pregnancy specific dermatoses may be correlated to hormonal changes that occur during pregnancy. Physiological skin changes are common during pregnancy in addition to cutaneous diseases specific to pregnancy. It is important to differentiate physiologic changes from specific dermatoses as the latter can be pruritic or painful to the mother and may pose significant risk to mother, her fetus or both.

Ambros-Rudolph et al has classified specific pregnancy dermatosis as (1) pemphigoid gestationis (2) polymorphic eruption of pregnancy (3) intrahepatic cholestasis of pregnancy and (4) atopic eruption of pregnancy.[3]

There have been many studies focussing on a particular dermatosis or other occurring in pregnancy. The studies available show wide variations in the incidence of specific dermatoses of pregnancy. Studies related to this topic are few in this part of the state.

The concerns of the patient having any of the dermatological disorders may range from cosmetic appearance to it's potential effects on the fetus in terms of morbidity and mortality. Some of the dermatoses may influence pregnancy and fetal health which can be countered effectively if diagnosed early. So a study was undertaken to know the incidence and type of pregnancy dermatoses and its influence on obstetric outcome if any.

The study was conducted with the aim to determine the proportion of pregnancy related dermatoses among antenatal women presenting to the outpatient department or referred from Obstetrics and Gynaecology department, to study the factors influencing pregnancy dermatoses and to study the effect of pregnancy dermatoses in the development of the baby if any.

METHODS

After getting sanction from ethical committee, all antenatal women attending the outpatient department with dermatological complaints and those cases referred from Obstetrics and Gynaecology department were taken up for the study. The study was conducted at Govt. Medical college hospital, Kottayam in central Kerala during April 2013 to October 2014.

A total of 175 antenatal women were studied irrespective of duration of pregnancy and gravidity. Detailed history and physical and cutaneous examinations were done. In all cases, blood, urine examinations, screening with VDRL and ELISA for HIV were done. In all cases with pruritus, LFT and serum bile acids were done. All cases were followed up to know their pregnancy outcome including sex of the baby, birth weight and mode of delivery etc.

Patients who were not willing to participate in the study and those who could not be followed up till delivery were excluded from the study.

RESULTS

A total of 175 antenatal women were included in the study. Of these, 95 were primi gravida (54.3%) and the rest 80 (45.7%) were multi gravida as shown in Table 1.

Mean age of the patients was 27.3 years with a standard deviation of 4.8. Their age ranged from 19 years to 42 years. Maximum patients belonged to 21-30 age group. Most of the patients presented in the third trimester as shown in Figure 1.

Table 1: Distribution of parity among subjects.

Gravida	No. of cases and percentage
Primi	95 (54.3%)
Multi	80 (45.7%)

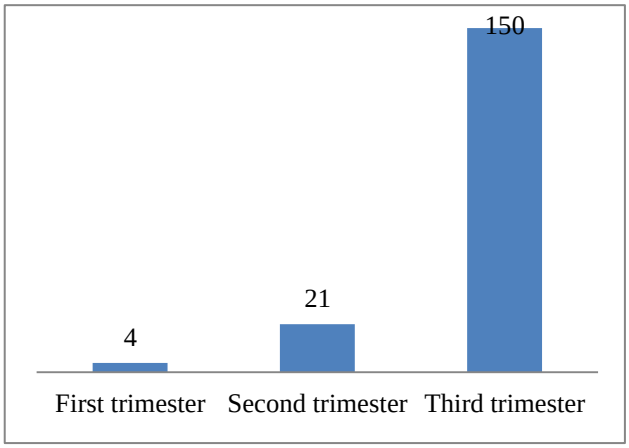

Figure 1: Trimester distribution.

Mean weight of patients was 60.5 kg with a standard deviation of 9.019. Body weight ranged from 43 kg to 105 kg. Physiological changes of pregnancy were present in 165 cases (94.3%). Of the various physiological changes, hyper pigmentation was the commonest being present in 158 (90.3%) cases. Most of them (97%) were in the third or second trimester.

Pregnancy specific dermatoses

Mean age of patients with pregnancy dermatoses was 27.1. Maximum number of cases was observed below 30 years. There was no association between age and occurrence of pregnancy dermatoses. Most common of the specific pregnancy dermatoses noted was PUPPP.

Table 2: Types of pregnancy specific dermatoses.

Specific pregnancy dermatoses	No. of cases	Percentage
PUPPP	42	63.60%
ICP	12	18.18%
AEP	11	16.60%
Pemphigoid gestation	1	1.50%

There was a statistically significant higher incidence of pregnancy specific dermatoses in third trimester (p= 0.03). No cases of pregnancy specific dermatosis occurred in first trimester as in Figure 2. All cases of PUPPP presented in the third trimester. There was a higher incidence of ICP and AEP in the third trimester as in Table 3.

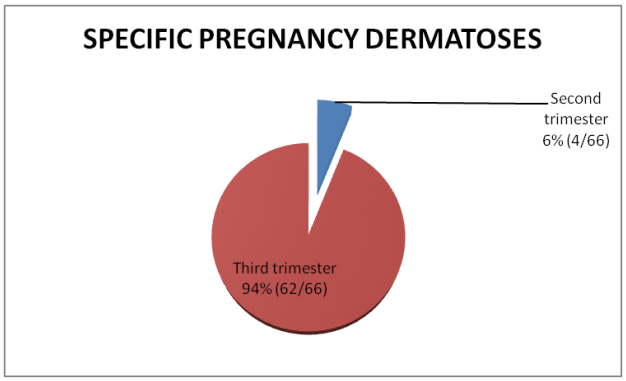

Figure 2: Distribution of each pregnancy dermatosis among trimesters.

As presented in Table 3, there was a statistically significant higher incidence of specific pregnancy dermatoses (42/66) among primi gravida in the study (p= 0.03). There was statistically significant higher incidence of PUPPP among primi. There was no association between gravidity and other pregnancy specific dermatoses.

Table 3: Occurrence of specific pregnancy dermatoses among primi and multi gravidas.

Specific pregnancy dermatoses	No. of cases among primi	No. of cases among multi	P value
PUPPP	30	12	0.01
ICP	5	7	0.3
AEP	7	4	0.5
Pemphigoid gestationis	0	1	NA

There was a significant association between PUPPP and higher maternal body weight. There was no association between other specific pregnancy dermatoses and body weight as given in Table 4.

Table 4: Weight of antenatal women and pregnancy dermatoses.

	PUPPP	ICP	AEP	Pemphigoid gestationis	Without specific dermatoses
No of patients with weight more than 60 kg	25	3	7	0	43
No of patients with weight less than 60 kg	17	9	4	1	66
P value	0.02	0.15	0.18	NA	

Table 5: Incidence of various pregnancy dermatoses in singleton and twin pregnancies.

	PUPPP	ICP	AEP	PG	Without specific dermatoses
Singleton pregnancy (total 168)	38	12	11	1	106
Twin pregnancy(total 7)	4	0	0	0	3

There was a higher incidence of PUPPP in twin pregnancies which was statistically significant (p= 0.036). No other pregnancy specific dermatosis showed statistically significant higher incidence among twin pregnancies as shown in Table 5. As given in Table 6, mean birth weight of babies whose mothers had PUPPP was found to be high which was statistically significant.

Table 6: Mean birth weight of babies of mothers with and without specific pregnancy dermatoses.

	Mean birth weight (in kg)	p value
PUPPP	3.05	0.001
ICP	2.87	0.3
AEP	2.80	0.5
Without specific dermatoses	2.77	

Table 7: Pregnancy dermatoses among mothers with GDM.

	With specific dermatoses				Without specific dermatoses
	PUPPP	ICP	AEP	P.G	
GDM present (28 cases)	11	1	1	0	15
GDM absent (147 cases)	31	11	10	1	94
P value	0.03	0.4	0.5	NA	

Table 8: Pregnancy dermatoses among mothers with male and female babies.

	With specific dermatoses				Without specific dermatoses
Mothers with male babies (95 cases)	PUPPP	ICP	AEP	PG	53
	27	7	7	1	
Mothers with female babies (80 cases)	15	5	4	0	56
P value	0.02	0.8	0.7	NA	

Table 9: Mode of delivery in patients with specific dermatoses.

	With specific dermatoses				Without specific dermatoses
No. of patients with normal delivery (101 cases)	PUPPP	ICP	AEP	P.G	64
	21	6	10	0	
No. of patients with caesarean delivery (74 cases)	21	6	1	1	45

We found higher incidence of PUPPP among mothers who had gestational diabetes mellitus (GDM). This was found to be statistically significant. Other specific dermatoses had no significant association as in Table 7.

PUPPP was found to be more common among mothers who had male babies. Other specific pregnancy dermatoses had no such association as presented in Table 8. Table 9 shows that there was no association between presence of specific dermatoses and mode of delivery.

DISCUSSION

Pregnancy is a unique physiological state characterised by metabolic, immunologic and hormonal readjustments, many of which bring changes in skin and mucus membranes. In addition to these, a host of rare pruritic dermatoses are specific to pregnancy.

During the 18 month study from April 2013 to October 2014, 175 antenatal women were taken up for the study. They were followed up to know the pregnancy outcome also.

Parity and age

Primis outnumbered multiparas in this study (54.3% against 45.7%) which is in agreement with other studies also.[4] The mean age in this study 27.3 years which is higher compared to other studies by Kumari et al and Muzzafir et al.[5,6] This could be due to relatively earlier age at marriage in other states compared to our state.

Majority of patients were in second and third trimester as in other studies by Kumari et al and Shivakumar et al.[5,7]

Physiological changes

Hyperpigmentation was the commonest physiological change (90.3%) as in other studies by Rathore et al, Kumari et al and Muzzafir et al.[4-6]

Specific dermatoses of pregnancy

We observed specific pregnancy dermatoses in 66 (38.3%) patients. Raj et al had only 1.5% cases and Kumari et al had 3.6%.[5,8] Higher percentage in this study is due to the fact that ours being a tertiary care teaching hospital, more cases are referred from periphery. No association was noted between age and occurrence of pregnancy dermatoses in this study.

PUPPP was the most common type of specific pregnancy dermatosis seen. This is in agreement with many other studies.[5]

Trimester distribution

All cases of pregnancy dermatoses occurred in the second and third trimester. Most other Indian studies also had similar findings.[7,8] Vaughan Jones et al found that 49% of specific dermatoses occurred during third trimester.[9] This is because of the maximum hormonal change occurring in the third trimester. In this study, all cases of PUPPP occurred in the third trimester. Ambros-Rudolph et al found that 98% cases of PUPPP occurred in third trimester.[3] This is attributed to the excessive abdominal stretching resulting in collagen and elastic fibre damage with subsequent conversion of non-antigenic molecules to antigenic ones, acting as a trigger for the inflammatory skin changes.[10-12] PUPPP was more common among primi gravid in this study i.e. 72%. Study by Ambros-Rudolph et al also had 73% primis.[3] This is because of the lax abdominal wall in multi gravida resulting in less stretching.

PUPPP was found to be more common in women with more body weight (>60 kg) and in twin pregnancy. This is also due to the excessive abdominal stretching. The same explanation can be given for the increased incidence in mothers whose babies have more birth weight.

In GDM, the body weight of the mother and baby will be higher, resulting in excessive abdominal stretching and PUPPP.

A higher incidence of PUPPP was seen in mothers with male babies. Other studies also show a higher occurrence of PUPPP in mothers with male foetuses.[9,13] This is due to the migration of fetal cells to maternal skin, leading to skin eruption because pregnancy is associated with peripheral blood chimerism, particularly during third trimester.[14] Why this occurs more with male fetus is speculative.

No adverse outcome occurred in patients and their off springs in our study. This could be due to the better obstetric care in this tertiary care centre.

CONCLUSION

Study was conducted on 175 patients between April 2013 and October 2014. Most common age group was 21-30 years. Most common physiological change was hyper pigmentation. Specific pregnancy dermatoses were observed in 66 (38.3%) cases. 94% of pregnancy dermatoses occurred in third trimester. Most common specific dermatosis in the study was PUPPP. 64% of patients with specific dermatoses were primi gravida. All cases of PUPPP occurred in third trimester. There was a higher incidence of PUPPP among mothers with more body weight, in twin pregnancy and gestational diabetes mellitus. PUPPP was also more common in mothers whose babies were male and with more birth weight. None of the specific dermatoses produced adverse outcome of pregnancy.

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