

Dermatological Disorders in Pregnancy: A Cross-Sectional Study

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Abstract

Introduction: During pregnancy immunologic, metabolic, endocrine, and vascular changes occur, which make the pregnant woman susceptible to changes of the skin and appendages, both physiologic and pathologic.

Aims: We undertook a clinical study to find out the frequency and pattern of dermatological disorders in pregnant women.

Material and Methods: All consecutive pregnant women attending skin out-patient department with dermatological disorders over a period of 3-year between August 2011 and November 2013 at our tertiary care hospital are included.

Results: A total of 372 pregnant women were included in this study. Out of these, 146 (39.25%) pregnant women were primigravida and 226 (60.75%) were multigravida. Skin disorders grouped into specific dermatoses (81 cases) and other dermatoses affected by pregnancy (291 cases). In various specific dermatoses of pregnancy, atopic eruptions of pregnancy were the most common disorder (53 cases). The most common infectious dermatoses affected by pregnancy were vulvovaginal candidiasis (58 cases) and non-infectious dermatoses affected by pregnancy were acne vulgaris (14 cases).

Conclusion: This study brings focus on pregnancy-specific and non-specific dermatoses.

Key words: Pregnancy non-specific dermatoses, Pregnancy-specific dermatoses, Sexually transmitted disease in pregnancy

INTRODUCTION

Pregnancy is characterized by alteration in endocrine, metabolic, vascular, and immunity system resulting in multiple cutaneous changes, which are physiological and pathological.¹ Physiological skin changes in pregnancy include changes in pigmentation, alterations of the connective tissue, vascular system, and hormonal function.²

The pre-existing skin conditions may either improve or exacerbate during pregnancy due to immunological, endocrinal, metabolic, and vascular changes in pregnancy.³ A typical examples is psoriasis, a classical Th1-associated disease, which often improves in pregnancy.⁴ Diseases

primarily associated with a Th2-immune response, such as lupus erythematosus and other autoimmune dermatoses,⁵ which deteriorate during pregnancy and improves after delivery. Acne vulgaris often improves but can worsen during pregnancy.⁶ The severity and frequency of skin infections are increased, Because of depressed cell-mediated immunity during pregnancy.⁷

Pregnancy-specific dermatoses represent a severely pruritic and inflammatory heterogeneous group of dermatoses associated exclusively with pregnancy and/or the immediate post-partum period.⁸ The rarity of these diseases, variability of morphology, and a lack of unequivocal diagnostic tests as well as limited treatment options leads to confusing terminologies and have made their management difficult. Recently, a new classification of pregnancy specific dermatoses has been established, based on the results of a retrospective study on more than 500 pregnant patients.⁹

Sexually transmitted diseases (STDs) remain a major global health concern.¹⁰ Women are the most vulnerable

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population to STDs and HIV. The florid manifestation of STDs is seen in pregnant women. The effect of pregnancy is additive to the immune suppression was seen in AIDS.¹¹

This study includes pregnancy specific, non-specific dermatological disorders and STD in pregnancy.

Aims and Objectives

1. To study different specific and non-specific dermatological disorders in pregnancy
2. To study the association between dermatological disorders and trimesters of pregnancy
3. To study STD in pregnancy.

MATERIAL AND METHODS

A cross-sectional study was conducted in the outpatient Department of Dermatology and VD in Smt. SCL Hospital, Ahmedabad. All pregnant women with dermatological disorder attended between August 2011 and November 2013 are included in this study, Irrespective of the duration of pregnancy and gravidity. A total of 372 pregnant women are included in the study. Informed consent was obtained before the interview and clinical examination. Detailed history including demographic data, chief complaints related to skin, onset in relation to duration of pregnancy, past or family history of similar lesions, exacerbating factors, associated medical or skin disorders, etc. were elicited and recorded.

The complete cutaneous examination was done. If any specific dermatoses of pregnancy are present, the morphology of skin lesions, distribution and the sites involved were studied. The relevant systemic examination was carried out. If any preexisting skin disease is present, any evidence of exacerbation or remission were recorded. Appropriate investigations were done to confirm the diagnosis. Beside this, laboratory procedures like Tzanck smear, KOH mount, Wet mount, pH and Gram's stain were carried out. To confirm the diagnosis skin biopsy were done in a few cases.

Inclusion Criteria

All pregnant women with dermatological disorders irrespective of the duration of pregnancy and gravidity.

Exclusion Criteria

Pregnant women with physiological skin changes.

RESULTS

A total of 372 pregnant women were included in our study from August 2011 to November 2013. Out of them,

146 (39.25%) were primigravidas and 226 (60.75%) were multigravidas (Tables 1-3 and Figure 1).

In this study, total patients with non-specific non-infectious disorder were 101, most of them presented in the 3rd trimester - 54 cases (53.47%), followed by in 2nd trimester - 37 cases (36.63%) and 1st trimester - 10 cases (9.90%).

In present study, Acne vulgaris (14 cases [13.86%]) was the most common non-specific non-infectious disorder, followed by chronic eczema (12 cases [11.8%]) and urticarial (10 cases [9.90%]). Rest of all other diseases accounted for < 8% each (Figure 2).

In this study, most of patients with infectious disorders were presented in 3rd trimester -100 cases (52.6%), followed by in 2nd trimester - 64 cases (33.58%) and in 1st trimester - 26 cases (13.54%).

Out of total infectious disorders (190 cases); vulvovaginal candidiasis (VVC) was the most common disorder, was presented in 58 cases (30.53%), followed by bacterial

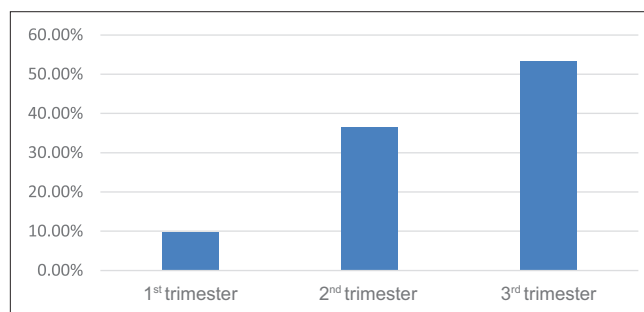


Figure 1: Analysis of patients with non-specific non-infectious disorders according to trimester

Table 1: Age group wise distribution of patients with dermatological disorders

Age group	Number of patients (%)
<20	53 (14.25)
21-30	300 (80.65)
31-40	19 (5.10)
>40	0
Total	372 (10)

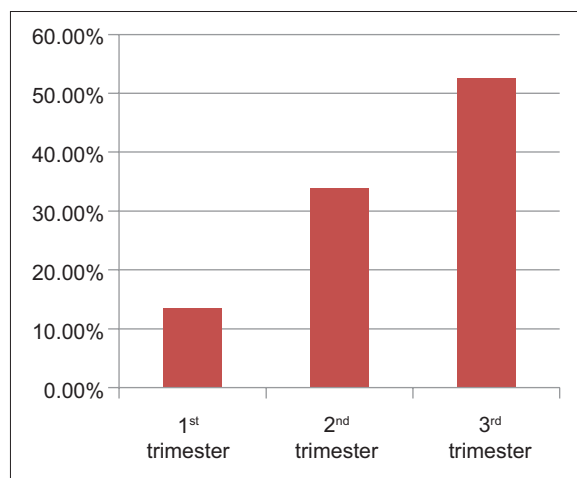
Table 2: Analysis of total number patients according to trimester

Trimester	Number of patients (%)
First	37 (9.95)
Second	120 (32.26)
Third	215 (57.80)
Total	372

Table 3: Analysis of patients with pregnancy specific disorders according to trimester and gravida

Disease	1 st trimester (%)	2 nd trimester (%)	3 rd trimester (%)	Number of primigravida (%)	Number of multigravida (%)	Total (% of pregnancy specific disorders) (%)	% of disorders from total no of dermatological disorders in pregnancy (372 cases) (%)
Atopic eruption of pregnancy	9 (11.11)	15 (18.51)	29 (35.80)	17 (32.07)	36 (67.93)	53 (65.43)	14.25
PUPPP	0	2 (2.4)	17 (20.99)	15 (78.95)	4 (21.05)	19 (23.45)	5.11
ICP	0	1 (1.23)	4 (4.93)	3 (60)	2 (40)	5 (0.06)	1.34
PG	1 (1.23)	0	1 (1.23)	1 (50)	1 (50)	2 (2.46)	0.54
Impetigo herpetiformis	0	0	2 (2.46)	2 (100)	0	2 (2.46)	0.54
Total	10 (12.34)	18 (22.22)	53 (65.44)	32 (39.51)	49 (60.49)	81 (100)	21.77

PUPPP: Pruritic uricular papules and plaques of pregnancy, ICP: Intrahepatic cholestasis of pregnancy, PG: Pemphigoid gestationis

**Figure 2: Analysis of patients with infectious disorders according to trimester**

vaginosis (BV) in 22 cases (11.58%), tinea in 17 cases (8.95%), scabies in 13 cases (6.84%), trichomonas vaginitis in 11 cases (5.79%), candidial intertrigo in 10 cases (5.26%) and rest of all diseases in < 5% cases (Tables 4 and 5).

DISCUSSION

Common skin conditions during pregnancy generally can be separated into three categories:¹² (1) Physiological: Hormone-related, (2) preexisting (non-specific dermatological disorders) and (3) Pregnancy-specific dermatological disorders. In this literature, we found various dermatological specific and non-specific disorders associated with pregnancy.

We enrolled total 372 pregnant women with the dermatological disorder for study irrespective of the duration of pregnancy and gravidity. The most common presenting age group of women with dermatological disorders was 21-30 year. 146 patients (39.25%) were primigravidas and 226 patients (60.75%) were multigravidas.

Table 4: Patients with similar complain in previous pregnancy in pregnancy specific disorder

Disease	Number of patients (%)
Atopic eruptions	20 (76.92)
PUPPP	3 (11.54)
ICP	2 (7.69)
PG	1 (3.84)
Total	26

PUPPP: Pruritic uricular papules and plaques of pregnancy, ICP: Intrahepatic cholestasis of pregnancy, PG: Pemphigoid gestationis

Table 5: Analysis of patients presented with STD

STD	Total	% of diseases from total no of STD (128)	% of diseases from total no of dermatological disorders (372)
VVC	58	45.31	15.59
BV	22	17.19	5.9
Trichomonas vaginitis	11	8.59	2.96
Herpes progenitalis	9	7.03	2.41
Genital wart	5	3.90	1.34
Genital molluscum	5	3.90	1.34
Syphilis	4	3.13	1.08
HIV	14	10.94	3.76
Total (34.41%)	128		34.41

STD: Sexually transmitted diseases, VVC: Vulvovaginal candidiasis, BV: Bacterial vaginosis

Total patients with pregnancy-specific dermatological disorders were 81 cases (21.77%). Most of them presented in 3rd trimester - 53 cases (65.44%), followed by 2nd trimester - 18 cases (22.22%) and 1st trimester - 10 cases (12.34%). In pregnancy specific dermatoses most common was atopic eruptions of pregnancy in 53 cases (65.43%); followed by pruritic uricular papules and plaques of pregnancy (PUPPP) in 19 cases (23.45%), intrahepatic cholestasis of pregnancy (ICP) in 5 cases (0.06%); and same number of pemphigoid gestationis (PG) in 2 case (2.46%) and impetigo herpatiformis 2 cases (2.46%). All of pregnancy specific dermatoses mostly found in the 3rd trimester of pregnancy. In pregnancy specific disorders, patients with similar complain in previous pregnancy were

total 26, out of them 20 (76.92%) patients with atopic eruptions of the pregnancy, followed by 3 cases (11.54%) of PUPPP, 2 cases (7.69%) of ICP, 1 case of PG (3.84%).

Total non-specific dermatological disorders were 291 cases (78.23%). Out of total patients of non-specific disorders non-infectious were 101 cases and infectious were 190 cases. Most of patients with non-infectious condition - 54 cases (53.47%) and infectious condition - 100 cases (52.6%) presented in the 3rd trimester. Acne vulgaris (14 cases [13.86%]) was the most common non-specific non-infectious disorder, followed by chronic eczema (12 cases [11.8%]) and urticarial (10 cases [9.90%]). VVC was the most common infectious disorder, presented in 58 cases (30.53%), followed by BV in 22 cases (11.58%), tinea in 17 cases (8.95%), scabies in 13 cases (6.84%), trichomonas vaginitis in 11 cases (5.79%), candidial intertrigo in 10 cases (5.26%), and others were < 10 in number.

Total 128 (34.41%) patients were presented with STD. Most of patients with VVC - 58 (45.31%), followed by 22 (17.19%) patients with BV, 11 (8.59%) patients of trichomonas vaginitis, 9 (7.03%) patients of herpes progenitalis, 5 (3.90%) patients of genital wart, 5 (3.90%) patients of genital molluscum, 4 (3.13%) patients of syphilis (venereal disease research laboratory positive) and 14 (10.94%) patients of HIV.

Total 14 patients were diagnosed as having HIV infection. Out of them 4 (28.57%) patients were presented with herpes progenitalis, 5 (35.71%) patients with VVC, 3 (21.43%) patients with BV, 1 patient (7.14%) with trichomonas vaginitis and 1 patient (7.14%) with plantar dyskeratosis.

We found 3 studies Kumari *et al.*,¹³ Shivakumar and Madhavamurthy¹⁴ and Raj *et al.*¹⁵ having maximum similarity with our study.

In 2007, Kumari *et al.*⁸ reported a study of 607 pregnant women. Skin changes grouped into physiological changes (all cases), specific dermatoses (22 cases) and other dermatoses affected by pregnancy (125 cases). In this study, total 147 patients presented with dermatological specific and non-specific disorders were included. In 1999, Shivakumar and Madhavamurthy⁹ studied 170 cases of pregnant women with skin and STDs. In 1992, Raj *et al.*¹⁰ screened 1175 pregnant women for cutaneous disorders. Out of these 114 pregnant women presented with skin and STD. In our study, we included total 372 patients presented with dermatological specific and non-specific disorders. Most common age group presented in Raj *et al.* study was 16-30 years, in Shivakumar and Madhavamurthy 11-20 years while in our study 21-30 years.

Shivakumar and Madhavamurthy found 86 cases (50.58%) of primigravida and 84 cases (49.41%) of multigravida; in Kumari *et al.* study, out of 607 patients 303 cases (49.9%) were primigravida and 304 cases (51.1%) were multigravida while in our study we found 146 cases (39.25%) of primigravida and 226 cases of (60.75%) multigravida.

In Shivakumar and Madhavamurthy study patients were presented mostly in 3rd trimester 105 patients (61.76%), Kumari *et al.* also found most common presentation of patients during 3rd trimester 444 cases (73.1%) and our study, we found similar results 215 cases (57.80%) in 3rd trimester.

Pregnancy-specific disorders were presented; in Raj *et al.* Study 17 cases (14.91%), Shivakumar and Madhavamurthy study 26 cases (9.41%), Kumari *et al.* study 22 cases (14.97%) while in our study 81 cases (21.77%). Prurigo of pregnancy was the most common pregnancy-specific disorder in Raj *et al.* study 14 cases (12.28%), Shivakumar and Madhavamurthy study 16 cases (9.41%) and we also found common pregnancy-specific disorder in study was Prurigo of pregnancy 40 cases (10.72%); while Kumari *et al.* study most common pregnancy-specific disorder was PUPPP 14 cases (9.52%). PUPPP was the second most common pregnancy-specific disorder in Raj *et al.* study 2 cases (1.75%) and we also found second most common pregnancy specific disorder was PUPPP 19 cases (5.11%). While in Shivakumar and Madhavamurthy study and Kumari *et al.* study second most common pregnancy-specific disorder was ICP, 6 cases (3.52%) and 5 cases (3.40%) respectively.

Among non-specific dermatological disorders in pregnancy, acne vulgaris was present in 15 cases (13.15%) of Raj *et al.* study; in 14 cases (9.52%) of Kumari *et al.* study and in our study we found 14 cases (3.76%). Eczema was present in 10 cases (8.77%) of Raj *et al.* study; in 5 cases (3.40%) of Kumari *et al.* study and in our study I found 12 cases (3.22%). Tinea was present in 16 cases (14.03%) of Raj *et al.* study; in 5 cases (3.40%) of Kumari *et al.* study and in our study I found 17 cases (4.57%). Kumari *et al.* found 2 cases (1.36%) of BV while we found 22 cases (5.9%). Shivakumar and Madhavamurthy found 17.64% of patients with scabies while we found 13 cases (3.49%).

Out of all STD, VVC was the most common disorder in all studies; in Raj *et al.* study 45 cases (39.47%), Shivakumar and Madhavamurthy study 21.78%, Kumari *et al.* study 17 cases (11.56%) and we also found VVC was the most common STD in our study 58 cases (15.59%). Second most common STD in Raj *et al.* study and Kumari *et al.* study was syphilis 11 cases (9.65%) and 4 cases (2.72%) respectively;

in Shivakumar and Madhavamurthy study was T. vaginitis 8.23% while in our study was BV 22 cases (5.9%).

Raj *et al.*, Shivakumar and Madhavamurthy and Kumari *et al.* were found 1 case (0.88%), 3 cases (1.76%) and 2 cases (1.36%) of HIV-seropositive respectively in their study while we found 14 cases (3.76%) of HIV-seropositive associated with pregnancy.

CONCLUSION

This study brings into focus various specific and non-specific skin disorders during pregnancy. In our study, all the dermatoses are common in young adults (21-30 years) predominantly within the 3rd trimester. The majority of women were multigravid. Prurigo of pregnancy was the most common and pruritic uricarial papules and plaques of pregnancy was the second most common pregnancy-specific disorder. Acne vulgaris was the commonest and eczema was the second most common non-specific non-infectious disorder. VVC is the most common and BV is the second most common sexual transmitted infection in pregnancy. In HIV seropositive, herpes genitalis was the commonest disorder.

REFERENCES

1. Karen JK, Pomeranz MK. Skin changes and diseases in pregnancy. In: Goldsmith LA, editor. Fitzpatrick's Dermatology in General Medicine. 8th ed. USA: The McGraw-Hill Companies, Inc.; 2012. p. 1204-12.
2. Shornick JK. Pregnancy dermatoses. In: Bologna JL, Jorizzo JL, Rapini RP, Horn TD, Mancini AJ, Mascaro JM, editors. Dermatology. London, Edinburgh, New York, Philadelphia, St. Louis, Sydney, Toronto: Mosby; 2003. p. 425-32.
3. Ambros-Rudolph CM. Disorders of pregnancy. In: Burgdorf WH, Plewig G, Wolff HH, Landthaler M, editors. Braun-Falco's Dermatology. 3rd ed. Heidelberg: Springer Medizin Verlag; 2009. p. 1160-9.
4. Farber EM, Bright RD, Nall ML. Psoriasis. A questionnaire survey of 2,144 patients. Arch Dermatol 1968;98:248-59.
5. James W, Berger T, Elston D. Andrews' Diseases of the Skin: Clinical Dermatology. 10th ed. Philadelphia, PA: Saunders; 2005.
6. van Pelt HP, Juhlin L. Acne conglobata after pregnancy. Acta Derm Venereol 1999;79:169.
7. Vaughan Jones SA, Hern S, Nelson-Piercy C, Seed PT, Black MM. A prospective study of 200 women with dermatoses of pregnancy correlating clinical findings with hormonal and immunopathological profiles. Br J Dermatol 1999;141:71-81.
8. Holmes RC, Black MM. The specific dermatoses of pregnancy. J Am Acad Dermatol 1983;8:405-12.
9. Ambros-Rudolph CM, Müllegger RR, Vaughan-Jones SA, Kerl H, Black MM. The specific dermatoses of pregnancy revisited and reclassified: Results of a retrospective two-center study on 505 pregnant patients. J Am Acad Dermatol 2006;54:395-404.
10. Fenton KA. Sexual health; expanding our frame for action. In: Gupta S, Kumar B, editors. Sexually Transmitted Infections. 2nd ed. UK: Elsevier; 2012. p. 2-9.
11. Minkoff H, Nanda D, Menez R, Fikrig S. Pregnancies resulting in infants with acquired immunodeficiency syndrome or AIDS related complex: Follow up of mothers, children and subsequently born siblings. Obstet Gynecol 1987;69:388-91.
12. American Family Physician Official Site: Common Skin Conditions during Pregnancy. Available from: <http://www.aafp.org/afp/2007/0115/p211>. [Last accessed on 2 Sep 2015].
13. Kumari R, Jaisankar TJ, Thappa DM. A clinical study of skin changes in pregnancy. Indian J Dermatol Venereol Leprol 2007;73:141.
14. Shivakumar V, Madhavamurthy P. Skin in pregnancy. Indian J Dermatol Venereol Leprol 1999;65:23-5.
15. Raj S, Khopkar U, Kapasi A, Wadhwa SL. Skin in pregnancy. Indian J Dermatol Venereol Leprol 1992;58:84-8.

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