Original Research Article **DOI: 10.56412/gmcp.2024.7.01.168**

INFECTIOUS CAUSES OF PRURITUS OF PREGNANCY: A STUDY ON EVALUATION AND OUTCOME

[1]Beant Singh, [1]Parneet Kaur, [2]Dimple Chopra, [1]Mandeep Kaur, [1]Sameeksha Verma

[1]Obstetrics & Gynaecology Department, GMC Patiala
[2]Skin & Venerology Department, GMC Patiala

Corresponding Author : Dr. Mandeep Kaur
Obstetrics & Gynaecology Department, GMC Patiala
Email : mk937769@gmail.com

Abstract:

Introduction: Pruritus in pregnancy is a common and burdensome symptom that can occur due to various underlying conditions. It may be the first sign of a pregnancy-specific pruritic disease or a dermatosis that coincides with pregnancy by chance. It is essential to recognize and address this symptom promptly, as some conditions can have detrimental outcomes for both the mother and the foetus.

Aims & Objective: To analyse the various infectious causes of pruritus in pregnancy and their maternal and foetal outcomes.

Material & Method: The present study was conducted in Department of Obstetrics & Gynaecology and Department of Venerology & Dermatology, GMC & Rajendra Hospital, Patiala. It was an observational prospective study in which all the cases presenting with pruritus were taken during the period from May 2020 to April 2021.

Results: During the study period, 218 pregnant women presented with complaint of pruritus. Infection was the most common cause of pruritus in pregnancy accounting for 46.3% subjects. The most commonly reported infection was fungal infection (17.4%). Vaginitis accounted for 15.1% cases with candida vaginalis being the most common (7.8%). Maternal and fetal complications were Preterm delivery, Premature rupture of membrane (PROM), preterm premature rupture of membrane (PPROM), Premature babies and NICU admission.

Conclusion: This study highlights the various causes of pruritus in pregnancy. Infection contributes the major cause of pruritus in pregnancy followed by specific dermatoses in pregnancy. In mother pruritus can cause sleep disturbance and affect quality of life. Among infectious causes like candida vaginalis, bacterial vaginosis and trichomonas can cause preterm delivery, PROM, PPROM, oligohydramnios and LBW babies. Chicken pox in early trimester can cause congenital varicella syndrome. Thus, early diagnosis and prompt treatment can improve maternal and fetal prognosis and can decrease morbidity.

INTRODUCTION

Pregnancy is a state that leads to various hormonal, metabolic and immunological changes, which may influence the functioning and structure of the skin and mucous membrane [1]. Skin changes in pregnancy can be due to physiological changes in pre-existing skin disease or development of new pregnancy specific dermatoses. Itching is also commonest complaints related to dermatoses of pregnancy occurring in up to 14-23% of pregnant women.[2] Pruritus may be so severe that it affects sleep and quality of life. Prevalence influenced by genetic and environmental factors which varies between population worldwide, it has prevalence of 0.7 to 5% in different population. Occurrence of IHCP In Chile 2.4% of all pregnancies are affected with 5% prevalence in women of Araucaria- Indian origin.[3]

Most of the cutaneous changes are benign and get resolved after pregnancy. Many immunological changes occur in pregnancy in maternal immune response which allows foetus to attach to uterus, cytokines profiles get altered towards the Th2

cytokines (IL-4, IL-5, IL-10, IL-13) which favours maintenance of foetus and its survival. Oestrogen suppresses IL-2 production while progesterone promotes the production of IL-4, IL-5, IL-10, and Progesterone has inhibitory effect on TNF-Alfa secretion and glucocorticoid levels which are increased in pregnancy. Progesterone inhibits the IL-1, IL-2, TNF- alfa productions and stimulate IL-10, IL-4.IL-13 production, while in post-partum period there is increase in IL-2, TNF-alfa, and IL-13 synthesis [4].

Most of the dermatoses are benign and get resolve in post-partum period, a few can result in foetal distress, prematurity, and still-birth like Intrahepatic Cholestasis of Pregnancy, Pemphigoid Gestationis and various infectious causes e.g. Fungal, bacterial, viral and parasitic. Few dermatological conditions can risk fetal life and require antenatal surveillance. Hence early diagnosis and prompt treatment can improve maternal and foetal prognosis and can decrease morbidity, thus awareness and recognition of these dermatological condition and familiarity with their treatment and outcome is important. Thus, a study was planned to analyse the various infectious causes of pruritus in pregnancy and their maternal and foetal outcomes.

MATERIAL AND METHODS

The present study was conducted in the department of Obstetrics and Gynaecology Department and Venerology & dermatology department, Rajendra Hospital, Patiala. It was an observational prospective study in which all the cases presenting with pruritus were taken during the period from May 2020 to April 2021 after obtaining approval from ethics committee of our institute.

Subjects were included study after taking consent and finding were filled in predesigned proforma. All patients underwent thorough detailed physical examination with the special emphasis on pruritus. In addition, all women with pruritus assessed its severity according to Visual Analogue Scale (VAS) and Verbal Rating Scale (VRS). The VAS is a 10-cm long horizontal line on which the patient indicates the point corresponding to her pruritus intensity, ranging from "no pruritus" to "worst pruritus imaginable". In clinical studies, it is highly recommended to use at least two methods of assessment of the intensity of pruritus. All participants also classified their pruritus with the 5-point VRS, scoring this symptom verbally as "no pruritus," "mild pruritus," "moderate pruritus," "severe pruritus," and "very severe pruritus.

All pregnant women with singleton or multiple pregnancy, irrespective of parity status and gestational age with or without pregnancy associated complication with or without medical or surgical risk irrespective of their registration status presenting with complaint of pruritus were included in study. All non-pregnant women with complaint of pruritus were excluded from the study Data related to socio-economic status, demographic information, previous obstetric history, associated medical condition were collected from each subject. Maternal age, parity, history of recurrence of pruritus, history of deranged LFT in previous pregnancy, history of viral infection, history of previous skin lesion, history of allergy was taken.

Statistical analysis: The data was compiled, tabulated and analysed at the end of the study period using MS Excel and SPSS version 22.

RESULT

The present study was conducted on 218 pregnant women who presented with complaint of pruritus. Maximum number of patients were in the age group of 20 - 30 years (77.5%), were residing in rural area (88.1%) and belonged to lower class (35.8%). (Table 1)

Age in years	Number of subjects	Percentage (%)
<20	7	3.2
20 -30	169	77.5
≥30	42	19.3
Area		
Rural	192	88.1
Urban	26	11.9
Total	218	100.0
Socio Economic Status		
Lower Class	78	35.8
Upper lower Class	73	33.5
Lower Middle Class	37	16.9
Upper middle Class	30	13.8
Total	218	100.0

Table 1: Sociodemographic profile of subjects

11wk3d was the earliest gestational age which patient had the first complaint of pruritus while in some cases the first time of presentation was late as 38wk2d and mean gestational age for first presentation of pruritus was 25.6 ± 4.5weeks. Most subjects had pruritus onset in 3rd trimester (73.4%). Nearly 50% of the pregnant women who presented with pruritus were gravida G1. (Table 2)

Period of Gestation	Number of subjects	Percentage (%)
1st Trimester	1	0.5
2nd Trimester	57	26.1
3rd Trimester	160	73.4
Gravida		
G1	113	51.8
G2	62	28.4
G3	26	11.9
G4 or more	17	7.9
Total	218	100.0

Table 2: Period of Gestation and Gravida at time of onset of pruritus

On taking the history regarding the characteristics of pruritus, it was found that most common type of sensation felt was tickling (seen in 54.6% subjects) followed by burning sensation in 33% subjects. Also, pruritus experienced by subjects most often occur during evening (in 38.1% subjects), but more than 50% subjects have pruritus during rest of the day. 70.2% of the subjects experienced pruritus over abdomen and chest, while 114(52.3%) experienced itching over hands. 33(15.1%) subjects had anogenital pruritus which has been caused due to bacterial vaginosis, candida or trichomonas infection or genital warts (HPV). (Table 3). 31(14.2%) subjects described pruritus as very mild, 76(34.9%) subjects described pruritus to be mild, 92(42.2%) has pruritus of moderate intensity, 17(7.8%) has pruritus of severe intensity and only 2(0.9%) subjects have pruritus of very severe intensity. (Fig 1)

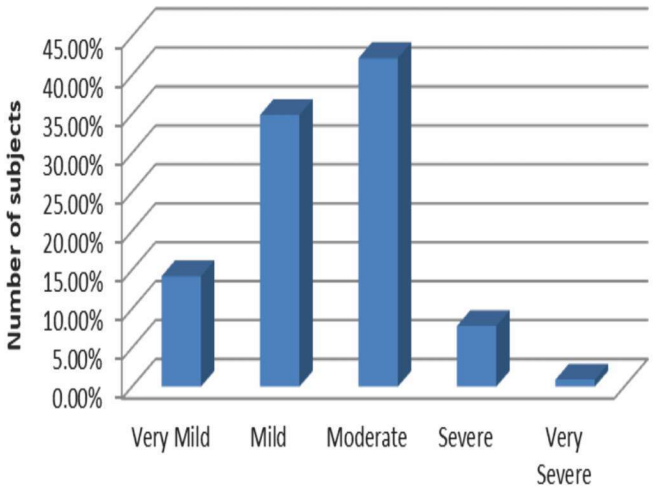
Type of Sensation	Number of subjects *	Percentage (%)
Burning	72	33.0
Pinch	30	13.8
Prickling	17	7.8
Tingling	50	22.9
Pain	3	1.4
Tickling	119	54.6
Timing		
Morning	30	13.8
Afternoon	63	28.9
Evening	83	38.1
Night	42	19.3
Total	218	100.0

Table 3: Characteristics of pruritus in study subjects

Site		
Abdomen & Chest	153	70.2
Hands	114	52.3
Feet & Lower limb	97	44.5
Anogenital	33	15.1

*** Multiple response**

Fig. No 1: VRS (Visual Rating Scale) for scoring of intensity of pruritus in subjects



Out of 218 subjects of pruritus, infection was the most common cause of pruritus in pregnancy accounting for 101(46.3%) subjects. 82(37.6%) subjects had specific dermatoses of pregnancy (includes IHCP, Atopic Eruption in Pregnancy, Polymorphic Eruption in pregnancy and Pemphigoid Gestationis). 30(13.8%) subjects had pruritus in pregnancy in which no primary cause was found, it is classified as pruritus of unknown origin (PUO) or pruritus associated with pregnancy. There were 5 cases in which 3 has history of contact dermatitis while 2 has history of blood transfusion related reaction.

The most common infection reported fungal infection where tinea was seen in 38(17.4%) subjects. There were 33(15.1%) cases of vaginitis in which candida vaginalis was most common (n=17,7.8%); Among 5 cases of warts (HPV), 3 Subjects had genital warts while rest 2 had warts on other part of body. (Table 4)

Table 4: Various causes of infection causing pruritus in pregnancy

Infection	Presentation	Number of subjects	Percentage (%)
Fungal	Tinea	38	17.4
	Candida	17	7.8
Bacterial	Bacterial Vaginosis	10	4.6
	Furuncle	2	0.9
Viral	Warts (HPV)	5	2.3
	herpes zoster	1	0.5
	Chickenpox	2	0.9
	HSV	8	3.7
Parasitic	Scabies	18	8.3
	Trichomonas	5	2.3

Among genital causes of itching vaginal candidiasis was the most common cause Preterm delivery was seen in 5(29.4%) subjects of candida, Premature rupture of membrane (PROM) was seen in 1(5.8%), preterm premature rupture of membrane (PPROM) was seen in 4(23.5%) subjects in candida. in 3 cases of genital HPV infection there were extensive warts on genital area so in them LSCS was done due to distorted anatomy or for prevention of infection to fetus. (Table 5)

Table 5: Maternal outcomes in various infectious causes of Pruritus

Infectious Causes	Preterm delivery (<37weeks)	Term PROM	PPROM	Oligo-hydramnios	Puerperal sepsis
Candida vaginalis (n=17)	5(29.4)	1(5.8%)	4(23.5%)	-	-
Bacterial vaginosis (n=10)	3(30%)	2(20%)	3(30%)	1(10%)	1(10%)
Trichomonas (n=5)	2(40%)	2(40%)	1(20%)	-	-
Tinea (n=38)	2(5.2%)	-	-	-	-
Furuncle (n=2)	-	-	-	-	-
Warts (HPV) (n=5)	-	-	-	-	-
Herpes zoster (n=1)	-	-	-	-	-
HSV (n=8)	1(12.5)	-	-	-	-
Chicken pox (n=2)	-	-	-	-	-
Scabies (n=18)	-	-	-	-	-

In vaginal candidiasis, 6(35.3%) subject babies had prematurity and NICU admission was seen in baby of 6(35.3%) subjects. In rest of infectious causes like HPV, Chicken pox, herpes zoster, scabies and tenia no adverse effect was in fetus. But 2 subjects of Tinea had prematurity and 1 need NICU admission. While 1 subject of HSV has prematurity. (Table 6)

Table 6: Fetal outcome in various infectious causes of Pruritus

	LBW	Prematurity	FGR	NICU Admission
Candida vaginalis (n=17)	1(5.9%)	6(35.3%)	1(5.9%)	6(35.3%)
Bacterial vaginosis (n=10)	3(30%)	3(30%)	2(20%)	4(40%)
Trichomonas (n=5)	-	-	1(20%)	3(60%)
Tinea (n=38)	-	2(5.2%)	-	1(2.6%)
Furuncle (n=2)	-	-	-	-
Warts (n=5)	-	-	-	-
Herpes zoster (n=1)	-	-	-	-
HSV (n=8)	-	1(12.5%)	-	1(12.5%)
Chicken pox (n=2)	-	-	-	-
Scabies (n=18)	-	-	-	-

Fig No. 2: Scabies



Fig No. 3: Tinea



Fig No. 4: Herpes Zoster at back of patient



DISCUSSION

This was an observational prospective study for period of 1 year in which 218 antenatal patients who presented with complaint of pruritus were observed.

In our study age group of the subject ranged from 18-41 years with an average age of 30.2 ± 4.20 years while in study done by Chopra D et al [5], age ranged from 18-40 years with an average age of 24.2 ± 3.53 years. The onset of pruritus ranges between earliest as 11wk3d and late as 38 wk2d and mean gestational age of onset of pruritus was 25.6+/- 4.6 week of gestation. It was comparable to study by author Ayanlowo OO et al [6].

In present study 113 (51.8%) cases were primigravida, multigravida was 105 (48.2%), whereas which was similar to the study done by Chopra D et al [5] number of 115(57.5%) were primigravida while 85(42.5%). However, in the study done by Justyna Szczech et al [7], 184(63.0%) were primipara and 108(37.0%) were multipara.

The majority of subjects in our study had moderate intensity of pruritus measured by VRS. This was in concordance with study done by Szczech J et al [7] in which majority of subjects has moderate intensity of pruritus(n=26,44.1%), 17(28.8%) mild intensity, 8(13.6%) very mild intensity, 7(11.9%) has severe, and 1(1.7%) has very severe intensity. The most common type of sensation felt in our study was tickling in 119(54.6%) which was comparable to study conducted by Szczech J et al [7], in which the most common type itch related sensation was tickling in 31(52.5%) cases.

Most common site of pruritus was over abdomen and chest seen in 153(70.2%) in our study. This was in concordance with study conducted by Justyna Szczech et al [7], in which most common site of pruritus was over abdomen and chest in 52(88.1%), followed by hand seen in 25(42.4%) and lower limb and feet in 24(40.7%) subjects. In our study genital pruritus was seen in 45(20.6%) subjects while in study conducted by Chopra D et al. [5] Number of subjects with genital pruritus was 23(11.5%) and generalized pruritus was seen in 112(56%). In our study among infection tinea being the most common infection seen in 38(17.4%) subjects followed by scabies 18(8.3%), and candida 17(7.8%), this was in concordance with Chopra D et al. [5] study in which tinea was most common infection seen in 24(12%) cases and next common infection was warts seen in 22(11%) followed by candida in 20(10%) cases. While in study done by Kannambal K.et al [8] candidiasis was the most common infection.

In our study among infection tinea being the most common infection seen in 38(17.4%) subjects followed by scabies 18(8.3%), and candida 17(7.8%), this was in concordance with Chopra D et al. [5] study in which tinea was most common infection seen in 24(12%) cases and next common infection was warts seen in 22(11%) followed by candida in 20(10%) cases. While in study done by Kannambal K.et al [8] candidiasis was the most common infection.

Preterm delivery occurred in 5(29.4%), PROM occurred in 1(5.8%) and PPROM in 4(23.5%) out of 17 cases of vaginal candidiasis and no subject has oligohydramnios or puerperal sepsis. It was similar to the study by Rathod S et al [9] where preterm delivery occurred in 11(28.9%), PROM in 3(7.89%), PPROM in 6(15.8%), oligohydramnios in 1(2.63%) and puerperal sepsis in 4(10.5%).

In our study in candida infection Low Birth Weight (LBW) and IUGR was seen in 1(5.9%) each, prematurity in 6(35.3%), and NICU admission in 6 (35.3%), no still birth was seen out of 17 causes of candida infection. This was in concordance with study done by Rathod S et al [9]. But in this study, still birth was also seen in 6(15.8%) LBW and FGR was seen in 3(7.9%) each, 2(5.3%) had prematurity, 16(15.8%) required NICU admission out of 38 cases of candida.

In study done by Dawood AS et al [10] incidence of preterm labor was seen in 33(16.75%), PROM was noticed in 60(30.4%) while in our study preterm was

seen in 9(28.1%) subjects of vaginitis and PROM was 5(15.6%).

In our study, no abortion, preterm delivery, no need of NICU admission, no FGR or still birth was observed in subjects infected with scabies, Tinea or HPV infection. No congenital malformation or preterm delivery was noted in subjects infected with Chicken pox or herpes zoster infection.

CONCLUSION

This study highlights the various causes of pruritus in pregnancy. Infection contributes the major cause of pruritus in pregnancy followed by specific dermatoses in pregnancy. Most common site of pruritus is abdomen and it most commonly occurs during evening. Pruritus can have adverse maternal and fetal outcome. In mother pruritus can cause sleep disturbance and affect quality of life. Among infectious causes like candida vaginalis, bacterial vaginosis and trichomonas can cause preterm delivery, PROM, PPROM, oligohydramnios and LBW babies. Chicken pox in early trimester can cause congenital varicella syndrome. HSV, Tinea and scabies present with no maternal or fetal risk. Thus, awareness and recognition of these infections and familiarity with their treatment and outcome is important. Early diagnosis and prompt treatment can improve maternal and fetal prognosis and can decrease morbidity.

REFERENCES

1. Kroumpouzos G, Cohen LM. Dermatoses of pregnancy J AM Acad Dermatol. 2001 Jul 1;45(1):1-22.
2. Kar S, Krishnan A, Shivkumar PV. Pregnancy and skin. . J Obstet Gynecol India 2012 Jun;62(3):268-75.
3. Lammert F, Marschall HU, Glantz A, Matern S. Intrahepatic cholestasis of pregnancy: molecular pathogenesis, diagnosis and management. J Hepatol. 2000 Dec 1;33(6):1012-21.
4. Black MM. Skin diseases in pregnancy. Princ. Pract. Obstet. Perinatol.. 1981;2:1361-79.
5. Chopra D, Sharma A, Mohi MK, Bahl RK, Mohi K. Myriad Of Cutaneous Changes In Pregnancy: A Study In Tertiary Care Hospital In North India. Int. J Sci. Res. 2017(6):182-86
6. Ayanlowo OO, Otrofanowei E, Shorunmu TO, Adegbola O. Pregnancy dermatoses: a study of patients attending the Antenatal Clinic at two Tertiary Care Centers in south west Nigeria. PAMJ-Clinical Medicine. 2020 Aug 4;3(156).
7. Szczęch J, Wiatrowski A, Hirnle L, Reich A. Prevalence and Relevance of Pruritus in Pregnancy. Biomed Res Int. 2017 Sep 25;2017.
8. Kannambal K, Tharini GK. A Screening Study on Dermatoses in Pregnancy. J Clin Diagn Res. 2017 May;11(5):WC01.
9. Rathod S, Vijayalakshmi S. Prevalence of vaginitis during pregnancy and its fetomaternal outcome in the rural setup. Int J Reprod Contracept Obstet Gynecol. 2016 Jun;5(6):1823-6.
10. Dawood AS, Omar MK. Incidence and types of vaginitis in pregnant women attending routine antenatal care at Tanta University Hospital: a cross- sectional study. Int J Pregn & Chi Birth. 2019;5(2):87-90.