

A STUDY OF NON-INFECTIOUS PRURITUS IN PREGNANCY: CAUSES AND EVALUATION

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ABSTRACT

Objectives: Itching is one of the most common complaints related to dermatosis during pregnancy occurring in 14–23% of pregnant women. Pregnancy-specific dermatoses constitute a heterogeneous group of pruritic skin eruptions seen exclusively during pregnancy and the postpartum period. These dermatoses may be linked to increased activity of maternal adrenal and pituitary glands, the development of fetal endocrine glands and are influenced by hormones such as progesterone, estrogen, and cortisone.

This study aims to evaluate various skin lesions during pregnancy. To explore the prevalence and variations of non-infectious pruritus in pregnancy and to evaluate the impact of non-infectious pruritus on maternal wellbeing.

Materials and methods: An observational prospective study was carried out on pregnant women presenting with complaints of pruritus. Data on socioeconomic status, demographics, obstetric history, medical conditions, and factors such as age, parity, and mode of delivery were collected. Neonatal outcomes, birthweight, NICU admission, morbidity, and mortality were documented.

Results: Majority of the subjects were in the age group of 20–30 years (77.5%). 88.1% resided in rural areas and 50% of the patients were primigravida. The majority (73.4%) of subjects had an onset of pruritus in the third trimester. The most common cause of pruritus was infectious (46.3%), specific dermatosis of pregnancy was observed in 37.6%, and in 13.8% of cases, pruritus was of unknown origin. IHCP was the most common cause of pruritus (40%). IHCP had the maximum number of preterm deliveries (36%), 48.5% of subjects had LSCS and induction was done in 45.4%.

Conclusion: Intrahepatic cholestasis of pregnancy is most prevalent among specific dermatosis of pregnancy which was associated with preterm deliveries, higher rate of induction, and LSCS.

Keywords: Pruritus, Dermatitis, Intrahepatic cholestasis

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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. Skin changes in pregnancy can be due to physiological changes in pre-existing skin diseases or the development of new pregnancy-specific dermatoses. Almost 90% of the women present with signs of hyperpigmentation in areas such as genitals, perineum, periumbilical skin, and areolas [1]. Skin changes in pregnancy such as striae gravidarum, melasma, hair, nail, and vascular changes are due to hormonal effects. Skin conditions may improve or may exacerbate as a result of immunological changes in pregnancy. Cell-mediated immunity is depressed during normal pregnancy which increases the severity and frequency of skin infections such as candidiasis and tinea corporis. Itching is one of the most common complaints related to dermatoses during pregnancy occurring in up to 14–23% of pregnant women [2]. Pruritus may be so severe that it affects the sleep and quality of life. The prevalence of itching in pregnancy is influenced by genetic and environmental factors which vary between populations worldwide. It has a prevalence of 0.7–5% indifferent populations. The occurrence of IHCP in Chile is 2.4% of all pregnancies and there is a prevalence of 5% in women of Araucaria-Indian origin [3].

Pregnancy-specific dermatoses constitute a heterogeneous group of pruritic skin eruptions seen exclusively during pregnancy or the immediate postpartum period. These dermatoses may be linked to the increased activity of maternal adrenal and pituitary glands and

the physiological development of fetal endocrine glands, influenced by hormones such as progesterone, estrogen, and cortisone.

While most of the cutaneous changes are benign and resolve after pregnancy, a few dermatological conditions can pose risks to fetal life, leading to complications such as fetal distress, prematurity, or stillbirth. Specific dermatoses in pregnancy have been categorized and classified by various researchers, and their recognition and understanding are crucial for effective management. In our study, we have classified specific dermatoses according to Shornik's (1998)

Classification [4] which includes:

- Polymorphic Eruption of Pregnancy
- Intrahepatic Cholestasis of Pregnancy (IHCP)
- Pemphigoid Gestationis
- Atopic Eruption of Pregnancy (AEP)

The study aims to provide a comprehensive analysis of the causes of pruritus in pregnancy, their evaluation, and the associated maternal and fetal outcomes, for non-infectious etiologies. Such research is essential for improving the understanding and management of dermatological conditions during pregnancy, ultimately enhancing the well-being of pregnant female and the unborn child.

Aims and objectives

1. To evaluate various skin lesions during pregnancy
2. Explore the prevalence and variations of non-infectious pruritus in pregnancy
3. Evaluate the impact of non-infectious pruritus on maternal well-being.

METHODS

This observational prospective study was carried out in the Department of Obstetrics and Gynecology and Department of Venerology and Dermatology Government Medical College and Rajendra Hospital, Patiala, during the period 2020–2021. The study focused on cases involving pruritus. After taking consent from the patient their information was documented in a predefined format.

All participants underwent a comprehensive physical examination with a particular emphasis on pruritus. The severity of pruritus was assessed using both the Visual Analog Scale, which measures the intensity on a scale from “no pruritus” to “worst pruritus imaginable,” and the Verbal Rating Scale, which categorizes pruritus verbally as “no pruritus,” “mild pruritus,” “moderate pruritus,” “severe pruritus,” or “very severe pruritus.”

All pregnant women presenting with the complaint of pruritus were included in the study, regardless of parity or gestational age, with or without pregnancy-related complications or medical or surgical risks, irrespective of their registration status. Exclusion criteria – all non-pregnant women coming with complaints of pruritus were excluded from this study.

Data on socioeconomic status, demographics, obstetric history, associated medical conditions, and other factors such as maternal age, parity, and delivery type were collected. Neonatal outcomes, including birth weight, NICU admission, morbidity, and mortality, were also documented.

The study’s results were subsequently compiled, tabulated, and analyzed at the conclusion of the study period.

RESULTS

During the study, a total of 218 subjects were enrolled. The majority of subjects were in the age group of 20–30 years (77.5%), and a significant proportion (88.1%) resided in the rural areas. Nearly 50% of patients who presented with pruritus were primigravida (Table 1).

11⁺³ weeks was the earliest gestational age at which the patient had the first complaint of pruritus whereas in some cases, the first presentation was as late as 38⁺² weeks and the mean gestational age for the first presentation of pruritus was 25.6 ± 4.5 weeks. The majority (73.4%) of the subjects had an onset of pruritus in the 3rd trimester (Table 2).

On taking the history regarding the characteristics of pruritus, it was found that the most common type of sensation felt was tickling (seen in 54.6% of subjects) followed by burning sensation in 33% of subjects. Furthermore, pruritus experienced by subjects occurred most often during the evening hours (38.1%), whereas 19.3% of subjects complained of pruritus during the night. 70.2% of the subjects experienced pruritus over the abdomen and chest, whereas 52.3% experienced itching over the hands, 44.5% experienced itching over feet and lower limbs, and 15.1% of subjects had anogenital pruritus which had been caused due to bacterial vaginosis, candida, trichomonas infection, or genital warts (HPV) (Table 3).

Among the 218 subjects with pruritus during pregnancy, the most common cause was infections (46.3%), which included fungal, viral, bacterial, and parasitic infections. Specific dermatoses of pregnancy were observed in 37.6% of subjects. In 13.8% of cases, the pruritus had no identifiable primary cause, categorized as pruritus of unknown origin (PUO) or pruritus associated with pregnancy. In addition, three subjects had a history of contact dermatitis and two had a history of blood transfusion-related reactions.

In our study, IHCP was the most common cause of pruritus among specific dermatoses of pregnancy seen in 15.1% of subjects followed by AEP, seen in 11% of subjects (Figs. 1 and 2), polymorphic eruption

Table 1: Demographic profile of subjects

Age in years	No. 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
Gravidity		
G1	113	51.8
G2	62	28.4
G3	26	11.9
G4 or more	17	7.9
Total	218	100

Table 2: Period of gestation at time of onset of pruritus

Period of gestation	Number of subjects	Percentage
1 st Trimester	1	0.5
2 nd Trimester	57	26.1
3 rd Trimester	160	73.4

Table 3: Characteristics of pruritus in the study subjects according to type, time, and site

Type of sensation	No. 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
Site		
Abdomen and Chest	153	70.2
Hands	114	52.3
Feet and lower limb	97	44.5
Anogenital	33	15.1

in 10.5% of cases and only 0.9% subjects had pemphigoid gestationis (Fig. 3) as depicted in Table 5.

In our study, IHCP had the maximum number of preterm deliveries which were 12 (36.4%). 16 (48.5%) subjects had LSCS and induction was done in 15 (45.4%) subjects of IHCP, whereas no need of induction was required in other causes of specific dermatoses but there were two subjects who had LSCS in AEP and one subject of PEP had LSCS. Two subjects each in AEP and PEP had preterm delivery.

Eruption of pregnancy in 23 (10.5%) and 2 (0.9%) had pemphigoid gestationis which is in concordance with the study conducted by Kannambal and Tharini [8] and Uniyal *et al.* [9], whereas in our study, prematurity was seen in 36.4% subjects, fetal distress was seen in 24.2% subjects, NICU admission was seen in 6.1%, MSL in 12.1% subjects and 48.5% subjects had low birth weight among cases with IHCP. The fetal prognosis was better in other pregnancy-specific dermatoses as shown in Table 7.

DISCUSSION

In our study, the age group of the subjects was from 18 to 41 years with an average age of 30.2±4.20 years whereas in the study done by Chopra *et al.*, [6] the age ranges from 18 to 40 years with an average age of



Fig. 1: Prurigo of pregnancy (AEP)



Fig. 2: Prurigo of pregnancy (P-type AEP)



Fig. 3: Pemphigoid gestationis

24.2±3.53 years whereas in a study by Alakananda *et al.* [5] patient age ranges from 18 to 36 years and average age of 25.98±4.7 years.

We found the major cause of pruritus in our study was due to infections (46.3%) followed by specific dermatoses in pregnancy (37.6%) whereas in 13.8% of subjects no primary cause was found and it was classified as PUO. Our study was in concordance with Chopra *et al.* [6] where also

Table 4: Provisional diagnosis of various causes of Pruritus

Provisional diagnosis	Number of subjects	Percentage
Infections	101	46.3
Specific dermatoses	82	37.6
PUO	30	13.8
Contact dermatitis	3	1.37
Blood transfusion	2	0.91
Total	218	100.0

Table 5: Distribution of pruritus due to specific dermatoses of pregnancy

Specific dermatoses of pregnancy	Number of subjects	Percentage
Intrahepatic cholestasis of pregnancy	33	15.1
Atopic eruption of pregnancy	24	11.0
Prurigo of pregnancy (P-type) – 6		
Eczema of pregnancy (E-type) – 15		
Pruritic folliculitis of pregnancy – 3		
Polymorphic eruption of pregnancy	23	10.5
Pemphigoid gestationis	2	0.9

Table 6: Maternal outcome in specific dermatoses of pregnancy

Maternal outcome	IHCP (n=33)	AEP (n=24)	PEP (n=23)	PG (n=2)
Preterm delivery	12 (36.4%)	2	2	-
Mode of delivery by LSCS	16 (48.5%)	2	1	-
Need for induction	15 (45.4%)	-	-	-

they could not find the primary cause (PUO) in 8% of subjects. While the study conducted by Szczech *et al.* [6], no cause of pruritus was seen in 61% of subjects and was classified as PUO.

We observed intrahepatic cholestasis of pregnancy to be the most common among specific dermatosis of pregnancy and this can be because of the fact that this study was conducted at a tertiary care hospital. IHCP was seen in 33 (15.1%) followed by AEP in 24 (11.0%), polymorphic in a study by Chopra *et al.* [6] and Deora *et al.* [10] AEP was the most common specific dermatoses of pregnancy reported.

IHCP affects the maternal outcome by causing an increase in cesarean sections as compared to the general population. In our study, IHCP had the maximum number of preterm deliveries which were 12 (36%), and LSCS was done in 16 (48.5%) subjects, and the need of induction was required in 15 (45.4%) subjects to reduce adverse fetal outcomes. IHCP also causes postpartum hemorrhage (PPH) as seen in a study done by Alakananda *et al.* [5] in which 6 (6%) cases of IHCP had PPH but in our study, there was no PPH. However, recurrence was seen in 7 (63.6%) in the present study which is in concordance with a study done by Alakananda *et al.* [5] and Padmaja *et al.* [11].

CONCLUSION

In this study, the distribution of subjects based on age and area revealed that the majority of participants were in the 20–30 age group (77.5%), and a significant proportion resided in rural areas (88.1%). The provisional diagnosis of pruritus causes in 218 subjects indicated that infection was the most common factor, accounting for 46.3% of cases, encompassing fungal, viral, bacterial, and parasitic infections. Specific dermatoses of pregnancy were observed in 37.6% of subjects, with IHCP being the most prevalent among them. IHCP was also associated with the highest number of preterm deliveries (36.4%) and a higher rate of induction (45.4%), with a majority undergoing a cesarean section (48.5%). Other specific dermatoses showed different maternal

Table 7: Fetal outcome in specific dermatosis of pregnancy

Fetal outcome	IHCP (n=33)	AEP (n=24)	PEP (n=23)	PG (n=2)
IUD	1 (3.0%)	-	-	-
Prematurity	12 (36.4%)	2 (8.3%)	2 (8.6%)	-
MSL	4 (12.1%)	-	-	-
Fetal distress	8 (24.2%)	-	-	-
NICU admission	2 (6.1%)	1 (4.1%)	-	-
Low birth weight (<2.5 kg)	16 (48.5%)	1 (4.1%)	-	-

outcomes, with a small percentage requiring LSCS and having preterm deliveries. These findings highlight the diverse nature of pruritus caused during pregnancy and the varying maternal outcomes associated with specific dermatoses.

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