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Cutaneous changes during pregnancy: A hospital based prospective study

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***Abstract*---**Objectives: This present study was to evaluate the various dermatological manifestation during pregnancy. Methods: A detailed history including chief complaints related to skin, onset in relation to duration of pregnancy, complete general physical & systemic examinations, associated skin / medical disorders were performed to all patients. Investigations-CBC, OGTT, TSH, VDRL, HIV, HBsAg, Anti-HCV, Urine routine examination, LFT, S. Bile Acids, KOH mount, Skin biopsy and DIF were done wherever required. Results: A total of 200 pregnant women were included in this study. The mean age of participants was 23.43±4.12 years. Majority of women 104(52%) were seen in third trimester. 62(31%) women were in second trimester. and 34(17%) were in the first trimester of pregnancy. Most of the women 136(68%) were multigravida and 64(32%) were primigravida. Areola/nipple180(90%) was the most common pigmentary changes. Pedal oedema 26(13%) was the most common type of vascular changes seen in third trimester pregnant women. Most common type of connective tissue changes was Striae gravidarum 113(56.5%). Conclusions: Cutaneous manifestations are very common during pregnancy. Areola/nipple (pigmentary changes), malar (type of chloasma), pedal oedema (vascular changes) and striae gravidarum (connective tissue changes) are common cutaneous changes are seen during pregnancy. Hence, time to time general awareness programme of cutaneous changes during pregnancy should be organised in rural and urban area. So that, proper management of dermatological changes could be possible.

Keywords---pregnancy, cutaneous changes, vascular changes.

Introduction

Pregnancy is a period in which more than 90% women have significant and complex skin changes that may have great impact on the woman's life [1]. It is accompanied by profound immunologic, metabolic, endocrine, and vascular changes, which make pregnant women susceptible to changes of skin and appendages, both physiologic and pathologic. These changes are a positive adaptation of the mother to accommodate and support the fetus as it grows and develops throughout gestation [2]. Many studies have focused on a particular dermatosis or other diseases and conditions related to pregnancy [3,4]. The cutaneous changes during pregnancy can be classified in to 3 types: physiologic skin changes in pregnancy, dermatoses and cutaneous lesions affected by pregnancy, and dermatoses only occurring in pregnancy, such as intrahepatic cholestasis of pregnancy and specific dermatoses of pregnancy [5]. Pregnancy-related skin changes are most likely caused by the hormonal changes associated with pregnancy. They have also been called physiologic skin changes or skin changes of endocrine origin e.g. chloasma, hirsutism, postpartum telogen effluvium, postpartum male-pattern alopecia, Stria, Spider telangiectasia and palmer erythema [6]. Hyperpigmentation is a common feature of pregnancy and may be seen in up to 90% of pregnant women [7]. The physiology of hyperpigmentation and chloasma may be related to elevated serum levels of melanocyte-stimulating hormone, estrogen and possibly progesterone [8]. Mild generalized hyperpigmentation is usually seen with accentuation of normally hyperpigmented areas such as the areola, nipples, genital skin, axillae and inner thighs [9]. Objectives of our study was to evaluate the trimester wise cutaneous changes during pregnancy.

Material and Methods

This study was conducted in Department of Dermatology with the collaboration of Department of Gynaecology and Obstetrics of Career Institute of Medical Science and Hospital, Lucknow, Uttar Pradesh, India during a period from October 2021 to March 2022. Attendants of entire subjects signed an informed consent approved by institutional ethical committee of Career Institute of Medical Science and Hospital, Lucknow was sought. A total of 200 pregnant women were enrolled in this study. All pregnant women irrespective of age, parity, socioeconomic status with or without skin complaints were included. Patient with sexually transmitted conditions were excluded from this study. A detailed history including chief complaints related to skin, onset in relation to duration of pregnancy, complete general physical & systemic examinations, associated skin / medical disorders were performed to all patients. Investigations-CBC, OGTT, TSH, VDRL, HIV, HBsAg, Anti-HCV, Urine routine examination, LFT, S. Bile Acids, KOH mount, Skin biopsy and DIF were done wherever required.

Statistical Analysis

Data was analysed by using SPSS software. Mean and standard deviations were observed. P-value was taken less than or equal to 0.05 ($p \leq 0.05$) for significant differences.

Observations

A total of 200 pregnant women were included in this study. The mean age of participants was 23.43±4.12 years. Most of the cases (56%) were in age group of 18-25 years, 38% in age group of 26-30 years and 6% with 31-35 years. Majority of women 104(52%) was seen in third trimester. 62(31%) women were in second trimester. and 34(17%) were in the first trimester of pregnancy. Most of the women 136(68%) were multigravida and 64(32%) were primigravida. Areola/nipple180(90%) was the most common pigmentary changes. 27(13.5%), 59(29.5%) and 94(47%) cases had the areola/nipple in first trimester, second trimester and third trimester respectively. Linea nigra was seen in 1(0.5%), 6(3%) and 62(31%) cases in 1st trimester, 2nd trimester and 3rd trimester. Chloasma was seen in 1(0.5%), 8(4%) and 26(13%) cases of 1st trimester, 2nd trimester and 3rd trimester respectively. Malar 20(10%) was the most common type of chloasma. 15(7.5%) was the Centro-facial chloasma.

Table 1
Trimester wise pigmentary changes

Cutaneous changes	1st trimester	2nd trimester	3rd trimester	No. of cases
Chloasma	1(0.5%)	8(4%)	26(13%)	35(17.5%)
Linea Nigra	1(0.5%)	6(3%)	62(31%)	69(34.5%)
Areola/Nipple	27(13.5%)	59(29.5%)	94(47%)	180(90%)
Genital areas	-	-	2(1%)	2(1%)
Nevi/Freckles	-	-	-	-

Table 2
Types of chloasma among the participant

Types of chloasma	Number of cases	Percentages
Centro-facial	15	7.5%
Malar	20	10%
Mandibular	-	-

Pedal oedema 26(13%) was the most common type of vascular changes seen in third trimester pregnant women. 6(3%) palmar erythema was seen in 2nd trimester. 4(2%) spider nevi were seen in 2nd trimester. 4(2%) varicose vein was seen in 3rd trimester. Changes in appendages were seen in 8(4%) of participants. Specific dermatoses of pregnancy were seen in 10(5%) pregnant women.

Type 3
Trimester wise distribution of vascular changes

Vascular changes	1st trimester	2nd trimester	3rd trimester	No. of cases
Spider nevi	-	4	-	4(2%)
Palmar erythema	-	6	1	7(3.5%)
Pyogenic granuloma	-	-	1	1(0.5%)
Pedal oedema	-	-	26	26(13%)
Varicose veins	-	-	4	4(2%)

Striae gravidarum 113(56.5%) was the most common type of connective tissue changes. Out of them, 1(0.5%), 32(16%) and 80(40%) striae gravidarum were seen in 1st, 2nd and 3rd trimester pregnant women.

Type 4
Trimester wise distribution of connective tissue changes

Connective tissue changes	1st trimester	2nd trimester	3rd trimester	No. of cases
Striae gravidarum	1	32	80	113(56.5%)
Acrochordon	-	1	2	3(1.5%)

Discussions

During the course of pregnancy there are profound hormonal, vascular, metabolic, and immunological changes [10] which make pregnant women susceptible to various physiological and pathological cutaneous changes [11]. First are the physiological skin changes in pregnancy which includes changes in pigmentation, alterations of the connective tissue and vascular system as well as changes in hair and nails. Of these various physiological pregnancy-induced changes, increased pigmentation and striae gravidarum are found to be very common during pregnancy. This increase in pigmentation during pregnancy is thought to be due to the melanocytic stimulating effect of estrogen and progesterone [12]. Most of the changes are transient and regress after delivery but some may remain in less marked form.

In the present study, the pigmentary changes were the most common physiological changes seen in pregnant women. The most common change was hyperpigmentation in the areola and nipple 162{81%) followed by linea nigra in 69(34.5%). Physiological cutaneous changes may be seen in almost all the pregnant females; which include changes in pigmentation, vascular system, striae distensae and endocrine function, as well as, changes in hair and nails [13]. The incidence of atrophic striae was the same in all the three trimesters. Shiva kumar and Madhava Murthy [14] reported a frequency of 66.47% for atrophic striae. Kumari et al. [15] reported that striae were seen in 484 (79.7%) cases, of which 217 (44.8%) were primi gravidas and 267 (55.2%) were multigravidas. Vascular changes are congruent with pregnancy because the gravid state increases blood volume, vascular dilatation, capillary permeability, and neovascularization, a process believed to be related to the increase in estrogen and angiogenic factors.

In a previous study, nonpitting edema of the legs, eyelids, face, and hands was present in about 50% of women during the third trimester [16]. Martin and Leal Khouri [17] reported that pigmentary alteration was seen in up to 90% of pregnant women, which is comparable to this study. Kumari et al [18] reported linea nigra, and secondary areola in (91.4%) and (78.4%) of their cases respectively which also matched with our study. In study by Panicker et al [19] pigmentary changes were seen in (65.27%) of the pregnant women during the second trimester and in (99.5%) of the pregnant women during the third trimester.

Kroumpouzo and Cohen [20] mention that striae distensae develop in up to 90% of women during the 6th and 7th month of pregnancy. Striae are mainly due to physical factors, stretching secondary to increase in the abdominal girth plays a major role. In this study striae were seen in 113(56.5%) of pregnant women matched with this result Raj et al. [21], 1992 found striae distensae in (75%) of pregnant women. Vascular changes in pregnancy result from distension, instability and proliferation of vessels during pregnancy. In the current study non-pedal edema was seen in 26(13%), varicose veins of legs was seen in 4(2%), palmar erythema was observed in 7(3.5%), whereas spider nevi occurred in 4(2%). Muzaffar et al [22] reported slightly increased prevalence of palmer erythema and spider nevi in their study (12%) and (37%) respectively. Raj et al [21] reported moderately increased prevalence of palmer erythemain their study (33.3).

An increased frequency of infection was seen in our study, which is common during pregnancy and is probably related to low cellular immunity. During pregnancy, the cells of the hyperplastic vaginal epithelium get filled with glycogen, desquamate, and contribute to low vaginal acidity, thereby creating an environment suitable for growth of Candida. We found vulvovaginal candidiasis in 21% of patients, which was similar to the findings reported by Shiva Kumar and Madhava Murthy [14]. Other infections seen were dermatophytosis (21.6%), scabies (2.8%), pityriasis versicolor (6.16%), and molluscum contagiosum (0.3%). Increased eccrine sweating, warm climate, and depressed cellular immunity may be the reasons for higher incidence of these infections [23].

Conclusions

This present study concluded that the cutaneous manifestations are very common during pregnancy. Areola/nipple (pigmentary changes), malar (type of chloasma), pedal oedema (vascular changes) and striae gravidarum (connective tissue changes) are common cutaneous changes are seen during pregnancy. Hence, time to time general awareness programme of cutaneous changes during pregnancy should be organised in rural and urban area. So that, proper management of dermatological changes could be possible.

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