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Original Article

Pregnancy and cutaneous changes

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ABSTRACT

Background: Pregnancy is associated with a number of changes in the skin. Some are directly related to pregnancy (dermatoses of pregnancy), some are modified by pregnancy, and yet others are referred to as physiological. We undertook a clinical study to determine the frequency and pattern of skin changes in pregnant females. **Materials and Methods:** A six-month, multi-centric, cross-sectional study was conducted. A total of 250 pregnant females participated in the study. Detailed history taking and complete dermatological examination were performed. Results were tabulated and analyzed. **Results:** Physiological skin changes were the most common finding, with pigmentary changes in 98% of the cases. Specific dermatoses of pregnancy were observed in 6.8% of the cases, with atopic eruption of pregnancy being the most common (4.8%). The prevalence of fungal infections was 9.6%. One case of psoriasis was exacerbated by pregnancy. **Conclusion:** Pregnant females are more likely to experience cutaneous manifestations. In order to establish the diagnosis, thorough history taking and knowledge of the clinical presentation are necessary.

Key words: Pregnancy-specific dermatoses; Pregnancy; Physiological changes; Skin

INTRODUCTION

Pregnancy causes physical changes to the body, including cutaneous. Immunological, vascular, metabolic, and endocrine alterations are thought to be responsible for the physiological and pathological skin changes that occur during pregnancy. To categorize pregnancy dermatoses, a classification has been developed [1]. They are, in general, the physiological skin changes that occur during pregnancy, dermatoses impacted by pregnancy, and dermatoses developing exclusively during pregnancy. Our study sought to determine the prevalence and distribution of these skin alterations in expectant mothers and to document any coincidental dermatoses that appeared simultaneously with pregnancy.

MATERIALS AND METHODS

A total of 250 pregnant females who visited the hospital for their scheduled antenatal checkup participated in this multi-centric, cross-sectional study based in the city of Chennai. Before collecting a history and conducting an examination, the patient's informed consent was obtained. Demographic information, the duration of the pregnancy, the obstetric score, any current dermatological complaints and their onset in relation to the pregnancy, and any dermatological disorder that happened during the previous pregnancies were included in the proforma. This was followed by a complete dermatological examination. The diagnosis was based mainly on clinical grounds. Wherever appropriate, bedside tests such as KOH and skin scrapings were performed. Results were tabulated and analyzed with IBM SPSS, version 20.0.

Ethics Statement

Participants enrolled for the study gave their informed consent after a verbal explanation.

RESULTS

A total of 250 pregnant females participated in our study for a period of six months. Among them,

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62% (n = 155) were primigravida. The average age was twenty-four years, ranging from 20 to 36 years. The third trimester was the time when a majority of the cases (n = 197; 78.8%) first appeared (Table 1).

Pregnancy-related physiological skin alterations were the most frequent presentations, observed in all cases (Table 2). The majority of the physiological changes (n = 245; 98%) were pigmentary changes. Linea nigra was the most prevalent pigmentary alteration (n = 228; 91.2%). Vascular alterations were found in 43 (17.2%) cases, bilateral pitting edema of the feet was the most frequent manifestation of vascular alterations, occurring in 37 cases (14.8%). In 127 cases (50.8%), connective tissue abnormalities manifesting as striae distensae were observed. Four cases (1.6%) of hair alteration were observed, three (1.2%) of which were telogen effluvium and one (0.4%) involved the onset of hirsutism during pregnancy.

There were seventeen cases of specific pregnancy-related dermatoses (6.8%). Atopic eruption of pregnancy was the most frequent presentation (n = 12; 4.8%). Five cases of polymorphic eruptions were noted (2%) (Table 3).

The course and symptoms of other dermatoses seen during the course of pregnancy were unmodified by pregnancy, with the exception of one patient, whose psoriasis was aggravated by pregnancy (Table 4).

Table 1: Distribution of the cases according to the trimester

Trimester of pregnancy	Number of cases	Percentage (n = 250)
First trimester	8	3.2%
Second trimester	45	18%
Third trimester	197	78.8%

Table 2: Distribution of physiological skin changes during pregnancy (LSCS: lower segment C-section)

Physiological skin changes seen	Number of cases	Percentage (n = 250)
Pigmentary changes		
Linea nigra	228	91.2%
Secondary areola	100	40%
Melasma	52	20.8%
Localized pigmentation (abdomen, gluteal)	45	18%
LSCS scar pigmentation	6	2.4%
Vascular changes		
Bilateral pitting pedal edema	37	14.8%
Varicose vein	6	2.4%
Connective tissue changes		
Striae distensae	127	50.8%
Hair changes		
Telogen effluvium	3	1.2%
Hirsutism	1	0.4%

DISCUSSION

We found that all pregnant females in our study (n = 250; 100%) revealed some signs of physiologic skin alterations. Pregnancy is known to cause hyperpigmentation in 90% of females according to one study [2]. Pigmentary changes were observed in 98% (n = 245) of our cases. Muzaffar et al. found pigmentary changes in 90.7 % of their cases [3], Fernandes et al. found pigmentary changes in 87.95% [4], Panicker et al. found hyperpigmentation in 87.67% [5], and Kannambal et al. found pigmentary changes in 90.8% [6]. Pregnancy pigmentary changes are thought to be caused by elevated serum levels of melanocyte-stimulating hormone, estrogen, and possibly progesterone [1]. Linea nigra was the most frequently observed pigmentary change in our study (n = 228; 91.2%). Linea alba, or the abdominal midline, darkens to become the linea nigra [7]. This usually runs from the pubic symphysis to the umbilicus yet may extend up to the xiphoid process [8]. Linea nigra was also identified as the most common pigmentary change in studies conducted by Panicker et al. (87.67%) and Hassan et al. (80%) [5,9].

Vascular alterations during pregnancy are believed to be caused by persistently high amounts of circulating estrogen, resulting in vessel dilation and proliferation [10]. In our study, bilateral pitting pedal edema was seen in 37 (14.8%) of the cases. Muzaffar et al. reported vascular abnormalities in 34.2% of their patients, with non-pitting pedal edema in 48.5% [3]. Kannambal et al. reported vascular alterations in 23.6% (n = 118) of their patients, with 16.4% exhibiting non-pitting pedal edema [6].

Table 3: Distribution of specific pregnancy dermatoses (AEP: atopic eruption of pregnancy; PUPP: pruritic urticarial papules and plaques of pregnancy)

Types of pregnancy specific dermatoses	Number of cases	Percentage (n = 250)
AEP	12	4.8%
PUPP	5	2%

Table 4: Distribution of miscellaneous dermatoses observed during pregnancy

Types of dermatoses	Number of cases	Percentage (n = 250)
Dermatophytosis	24	9.6%
Scabies	4	1.6%
Acne vulgaris	8	3.2%
Psoriasis	1	0.4%
Acute urticaria	10	4%
Pityriasis versicolor	7	2.8%

The prevalence of striae gravidarum was found to be 50.8% (n = 127) among our participants. The onset was more frequent during the third trimester (67.8%). Adrenocortical hormones, estrogen, relaxin, and physical factors such as straining caused by an increase in abdominal circumference may contribute to the higher occurrence of striae during the third trimester [6].

Telogen effluvium (n = 3; 1.2%) and hirsutism (n = 1; 0.4%) were the two types of hair alterations observed in our study. Muzaffar et al. found hair alterations in eighteen (12.8%) patients. Seven (38.9%) of the eighteen cases had diffuse scalp hair thinning and 50% experienced hair lengthening and improvement [3]

According to our results, atopic eruption of pregnancy was the most common type of specific pregnancy dermatosis (n = 12; 4.8%) for which atopic eczema developed for the first time during pregnancy. This began around the second trimester in all cases, which were all primigravidae. The neck and upper back were the most commonly affected areas. The four disorders listed in Holmes and Black's [11] initial classification of pregnancy-specific dermatoses were herpes gestationis (also known as pemphigoid gestationis), polymorphic eruption of pregnancy, prurigo, and pruritic folliculitis of pregnancy. Atopic eruption of pregnancy was also the most common specific pregnancy dermatosis observed by Fernandes et al. (70.88%) and Hassan et al. (50%) [4,9]. PUPPP (pruritic urticarial papules and plaques of pregnancy) was observed in five cases (2%) during our study. They were all primigravidae and the onset occurred during the third trimester. According to a hypothesis, rapid abdominal wall distension in primigravidae damages the connective tissue in the striae by converting non-antigenic molecules into antigenic, inducing an inflammatory reaction [1,12,13].

The most common concurrent dermatological disorder observed during pregnancy was dermatophytic infection (n = 24; 9.6%), which was confirmed by skin scarping and a KOH mount. Pregnancy had no effect on the course or characteristics of the dermatoses reported (Table 4), except for one patient, whose psoriasis was exacerbated during the pregnancy period. According to a study by Murase et al., 55% of their patients reported an improvement during pregnancy, 21% showed no change, and 23% reported the worsening of their psoriasis [14]. In another study, 63.3% of participants reported an improvement in their psoriasis and 87.7% experienced a postpartum flare, most commonly in four months of childbirth [15].

Pregnancy may necessitate a change in psoriasis treatment. During pregnancy, careful consideration should be given to the toxicity of the drugs and their safety for the mother and fetus. Topically applied drugs are the first-line treatment during pregnancy [16,17]. Emollients and moisturizers should be employed first for limited disease, as they are well-tolerated and produce few side effects [18]. As a second-line treatment, potent or super-potent topical corticosteroids may be administered. Current research suggests that they are associated with an increased risk of low birth weight [18,19]. During pregnancy, the first-line treatment for patients with moderate to severe psoriasis is phototherapy with NB-UVB. Methotrexate is categorized as category X by the FDA. It is contraindicated during pregnancy [20,21]. TNF inhibitors are probably the best option for the systemic therapy of psoriasis during pregnancy based on increasing evidence that these medications have no teratogenic, embryotoxic, or fetotoxic effects [22].

CONCLUSION

Clinical decision-making between active intervention and reassurance is aided by a strong clinical ability to distinguish between physiological skin changes and specific dermatoses of pregnancy. Intervention during pregnancy may be challenging because it necessitates thorough care for both the mother and the fetus.

Statement of Human and Animal Rights

All the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the 2008 revision of the Declaration of Helsinki of 1975.

Statement of Informed Consent

Informed consent for participation in this study was obtained from all patients.

REFERENCES

1. Kroumpouzos G, Cohen LM. Dermatoses of pregnancy. J Am Acad Dermatol. 2001;45:1-22.
2. Winton GB, Lewis CW. Dermatoses of pregnancy. J Am Acad Dermatol. 1982;6:977-98.
3. Muzaffar F, Hussain I, Haroon TS. Physiologic skin changes during pregnancy: A study of 140 cases. Int J Dermatol. 1998;37:429-31.
4. Fernandes LB, Amaral WN. Clinical study of skin changes in low

and high risk pregnant women. An Bras Dermatol. 2015;90:822-6.
5. Panicker VV, Riyaz N, Balachandran PK. A clinical study of cutaneous changes in pregnancy. J Epidemiol Glob Health. 2017;7:63-70.
6. Kannambal K, Tharini GK. A screening study on dermatoses in pregnancy. J Clin Diagn Res. 2017;11:WC01-WC05.
7. George AO, Shittu OB, Enwerem E, Wachtel M, Kuti O. The incidence of lower mid-trunk hyperpigmentation (linea nigra) is affected by sex hormone levels. J Natl Med Assoc. 2005;97:685-8.
8. Wong RC, Ellis CN. Physiologic skin changes in pregnancy. J Am Acad Dermatol. 1984;10(6):929-940.
9. Hassan I, Bashir S, Taing S. A clinical study of the skin changes in pregnancy in Kashmir valley of north India: A hospital-based study. Indian J Dermatol. 2015;60:28-32.
10. Millintgton GWM, Brown GRAC. Skin and skin disease throughout life. In: Burns T, Breathnach S, Cox N, Griffiths C. Rook's Textbook of Dermatology, 8thedn. Wiley – Blackwell publications, 2010;8.9-13.
11. Holmes RC, Black MM. The specific dermatoses of pregnancy. J Am Acad Dermatol. 1983;8:405-12.
12. 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.
13. Beckett MA, Goldberg NS. Pruritic urticarial plaques and papules of pregnancy and skin distention. Arch Dermatol. 1991;127:125-6.
14. Murase JE, Chan KK, Garite TJ, Cooper DM, Weinstein GD. Hormonal effect on psoriasis in pregnancy and postpartum. Arch Dermatol. 2005;141:601-6.
15. Boyd AS, Morris LF, Phillips CM, Menter MA. Psoriasis and pregnancy: Hormone and immune system interaction. Int J Dermatol. 1996;35:169-72.
16. Babalola O, Strober BE. Management of psoriasis in pregnancy. Dermatol Ther. 2013;26:285-92.
17. Bae YS, Van Voorhees AS, Hsu S, Korman NJ, Lebwohl MG, Young M, et al; National Psoriasis Foundation. Review of treatment options for psoriasis in pregnant or lactating women: From the Medical Board of the National Psoriasis Foundation. J Am Acad Dermatol. 2012;67:459-77.
18. Das A, Panda S. Use of topical corticosteroids in dermatology: An evidence-based approach. Indian J Dermatol. 2017;62:237-50.
19. Chi CC, Wang SH, Wojnarowska F, Kirtschig G, Davies E, Bennett C. Safety of topical corticosteroids in pregnancy. Cochrane Database Syst Rev. 2015;2015:CD007346.
20. Rademaker M, Agnew K, Andrews M, Armour K, Baker C, Foley P, et al. Psoriasis in those planning a family, pregnant or breast-feeding. The Australasian Psoriasis Collaboration. Australas J Dermatol. 2018;59:86-100.
21. Bangsgaard N, Rørbye C, Skov L. Treating psoriasis during pregnancy: Safety and efficacy of treatments. Am J Clin Dermatol. 2015;16:389-98.
22. Balakirski G, Gerdes S, Beissert S, Ochsendorf F, von Kiedrowski R, Wilsmann-Theis D. Therapy of psoriasis during pregnancy and breast-feeding. J Dtsch Dermatol Ges. 2022;20:653-83.

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