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Original Article

Physiological skin changes during pregnancy

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Abstract

Objective To find out the frequency and pattern of physiological skin changes in pregnant women.

Methods This descriptive study evaluated 200 consecutive pregnant females presenting to Dermatology Outpatient Department of Nawaz Social Security Hospital, Lahore over a period of one year.

Results Total of twenty-three cutaneous manifestations were studied including striae gravidarum, hyperpigmentation, hair, nail and vascular changes. Majority of pregnant females complained of striae gravidarum (stretch marks) affecting 71.5% of study population closely followed by pigmentation i.e. linea nigra (64.5%) and melasma (63.5%). The most common vascular change noticed was palmar erythema (43.5%) and nail changes included leukonychia (15%), while diffuse hair loss (11.5%) was the most frequently found hair change.

Conclusion The appreciation of common physiological skin changes during pregnancy will assist in better patient care during antenatal period.

Key words
Pregnancy, skin, hair, nails, physiological changes.

Introduction

Pregnancy is a period of stress for women. During the course of pregnancy, there is a significant shift in endocrine, metabolic, vascular and immunological milieu of gravid female.[1] These alterations make the pregnant female susceptible to various physiological and pathological cutaneous manifestations.[2] The taxonomy of skin conditions associated specifically with pregnancy includes: (1) benign skin conditions from normal hormonal changes (2) exacerbation/remission of pre-existing skin conditions during pregnancy, and (3) pregnancy-specific dermatoses.[3] The first group comprises of "physiological skin conditions" including striae gravidarum, hyperpigmentation, nails, hair, vascular and glandular changes.[4] These are the most commonly occurring category of dermatological changes during pregnancy affecting almost 90% of pregnant women.[5]

There are various physiological pregnancy-induced changes, out of which increased pigmentation and striae gravidarum are found to be very common during pregnancy.[6] Striae appear as long linear bands due to collagen rupture mostly on the abdomen, and buttocks. The cause of these stretch marks is multifactorial including various physical and hormonal factors.[5] They usually appear during sixth and seventh months of pregnancy and fade after delivery but never disappear completely. Nearly all pregnant women experience some degree of hyperpigmentation. This increase in pigmentation during pregnancy is thought to be due to the melanocytic stimulating effect of estrogen and progesterone.[7] The frequently

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affected areas are axilla, areola, genitals, back of neck and previous scars.[2] Linea nigra and melasma are the typical skin conditions associated with pregnancy.[2,5,7] An increase or decrease in hair growth is common during pregnancy. These may include hirsutism, hypertrichosis and alopecia[8] which are most probably due to the endocrine changes of pregnancy. Nail changes may appear as early as sixth week[7] and consist of leukonychia, distal onycholysis, brittleness, sublingual debris and koilonychias.[9] The exact mechanism is unknown. Vascular alterations are due to distension, instability, and proliferation of vessels leading to spider angiomas, palmar erythema, varicosities, and gingival edema.[7] Similarly, glandular activity may also be altered.[10] Secretions of sebaceous and eccrine glands is increased while that of apocrine glands is decreased.[7]

The underlying mechanisms of most cutaneous changes of pregnancy include increased activity of the maternal adrenal and pituitary glands along with a contribution from the developing fetal endocrine glands, increased cortisone levels, accelerated metabolism, and enhanced production of progesterone and estrogen hormones.[11]

Most of the changes are transient and regress after delivery but some may remain in less marked forms leading to anxiety in women. It is essential for dermatologist to recognize these normal cutaneous changes typical of pregnancy and distinguish them from disease conditions in order to avoid unnecessary testing/interventions and reduce discomfort caused by these changes.[5]

Many studies conducted in the past described the pregnancy-induced skin changes. But these articles enrolled patients with different skin characteristics than our population.

The aim of our study was to determine cutaneous manifestations of pregnancy in Pakistani women assuming that the skin features of our pregnant women are different from other populations so the skin changes may not be similar.

Methods

This descriptive study was conducted after approval of institutional ethical committee in the outpatient department of Dermatology, Nawaz Sharif Social Security Teaching Hospital, affiliated with University College of Medicine, The University of Lahore over a period of one year from April 2016 to April 2017. Two hundred pregnant women were enrolled in the study through non-probability purposive sampling technique. Approval from ethical committee was obtained.

All pregnant women with physiological skin changes developed during pregnancy were included in the study, irrespective of gestational age and parity. Specific dermatoses of pregnancy or pre-existing skin lesions were excluded.

After taking informed written consent from each patient, a predesigned proforma was filled by the researcher. It recorded detailed history including demographic data, chief complaints related to skin, presence of itching, skin lesions, onset in relation to duration of pregnancy, jaundice, past or family history of similar lesions, exacerbating factors, associated medical or skin disorders.

Complete cutaneous examination was done in all cases to study the pregnancy-induced physiological changes of skin. Following skin changes were considered: striae gravidarum, hyperpigmentation, hair changes i.e. hair fall, increase in hair, nail changes including leukonychia, koilonychia, ridging, sublingual

debris and various vascular and glandular alterations. Relevant systemic examination was carried out. Appropriate investigations were done where required.

Statistical analysis was performed by SPSS, version 19 statistical software package. Data were expressed as percentages.

Results

Of total 200 patients, 93 (46.5%) were primigravida and 107 (53.5%) were multigravida. Their age range was 22 to 34 years with a mean of 26 years. The majority of patients presented in their second (58 cases, 29%) or third trimester (139 cases, 69.5%). Most of the patients (129 cases, 64.5%) belonged to lower socioeconomic status and were residents of Lahore. The chief complaint was itching (N=146; 73%) in our study population.

Regarding skin conditions perceived by pregnant women, data are presented in **Table 1**.

Table 1 Cutaneous manifestations in study population

Cutaneous change	*N (%)*
Pigmentation	
Linea nigra	129 (64.5)
Melasma	127 (63.5)
Linea alba	80 (40.0)
Diffuse regional pigmentation	54 (27.0)
Pseudoacanthosis nigricans	54 (27.0)
Darkening of moles	18 (9.0)
Skin glow	5 (2.5)
Vascular changes	
Palmar erythema	87 (43.5)
Varicose veins	19 (9.5)
Gingival hyperplasia	45 (22.5)
Purpura	23 (11.5)
Hair changes	
Diffuse hair loss	23 (11.5)
Hirsutism	19 (9.5)
Alopecia	6 (3.0)
Hypertrichosis	3 (1.5)
Nails changes	
Leukonychia	30 (15.0)
Koilonychia	17 (8.5)
Sublingual debris	13 (6.5)
Ridging	10 (5.0)
Onycholysis	9 (4.5)
Connective tissue changes	
Striae gravidarum	143 (71.5)
Skin tags	4 (2.0)
Sweat glands	
Increased sweating	110 (55.0)

The most common cutaneous manifestation observed was striae gravidarum (stretch marks) affecting 143 (71.5%) of study population. History of stretch marks during previous pregnancy was recorded as 71.3% (102 cases out of 143). The second most common skin change observed was pigmentation: linea nigra (N=129; 64.5%) closely followed by melasma (N=127; 63.5%) and linea alba (N=80; 40%). The regions affected were areola, genitalia, previous scar and nape of neck. 18 (09%) patients experienced a darkening of moles and freckles. Out of these 18 patients, 6 had a similar complaint in previous pregnancy which had regressed spontaneously after delivery. A diffuse palmar erythema was seen in 87 (43.5%) while 45 (22.5%) experienced gingival hyperplasia and occasional bleeding from gums specially while brushing their teeth. Other vascular changes observed were purpura (N=23; 11.5%) and varicose veins (N=19; 9.5%). Two patients had recurrent varicose veins involving same leg in the last pregnancy.

Many patients suffered from hair and nail changes. The most common was diffuse hair loss (N=23; 11.5%) and leukonychia (N=30; 15%). Increased sweating was seen in 110 (55%) cases indicating altered glandular activity.

Discussion

Regarding pregnancy-induced skin changes, the most common change found in our study was striae gravidarum (stretch marks). According to literature approximately 90% of pregnant women experience stretch marks especially in

sixth and seventh month of pregnancy.[12-14] Our data indicated that abdomen is the most affected area, followed by buttocks. The results of our study are consistent with previous studies.[5,15]

Hyperpigmentation is one of the frequently cited cutaneous changes occurring during pregnancy. In this study linea nigra and melasma gravidarum was observed in 64.5% and 63.5% of study population, respectively. These are in accordance to the study by Kumari *et al.*[2] which stated that the frequency of linea nigra was slightly more than melasma. It may be due to the similarity in geographical characteristics with our population. In contrast Urasaki[5] described melasma gravidarum as the most evident pigmentary change. The onset in most of our cases was during the second and third trimester similar to Kumari *et al*.[2] report. Asians are supposed to be more susceptible to this brownish discoloration.[12] The hyperpigmentation sites of involvement were areola, followed by linea alba, genitalia, previous scar and back of neck. This pattern is a feature of typical pregnancy. The other closely related change is darkening of moles which was seen in 9% of the females. Our results are similar to those recorded by Shah *et al*.[15] The relation between skin color and pigmentary change was not investigated.

The third most prevalent modification noted in our study was palmar erythema (43.5%), which in contrast to Kumari *et al.*[2] where no case of palmar erythema was described. Reason provided was reduced visibility due to darker skin. Some of the previous studies reveal a higher incidence of palmar erythema in light complexion pregnant females.[3] Varicosity of veins in lower limbs was found in 9.5% of cases, which is less than the published data. Tyler[5] recorded varicose disturbances in approximately 40% of study population due to the compression of pelvic and abdominal vessels. The lower incidence in our community may be due to the difference in traditions and habits i.e. females prefer working in sitting posture while in Western countries the legs are dependent in their usual working position. Two of our patients gave a history of varicose veins in previous pregnancy. Evidence suggests that women with a past history of varicose veins during pregnancy are at a higher risk when compared to nulliparous females.[16] Gingival hyperplasia affected 22.5% of our population. In previous studies, prevalence of gingival hyperplasia during pregnancy varied from 30% to even 100%.[17]

Many pregnant women experience hair changes. The results of this study showed a higher frequency of diffused thinning of scalp hair. Hirsutism was only reported by 9.5% of cases, which was more pronounced on face. Few patients complained of alopecia (3%) and hypertrichosis (1.5%), suggesting that greater frequency of hair alteration consists of hair loss rather than increase in hair. Similar outcomes had been described by former researchers.[2,5]

Nails modifications observed in our study population were ridging, leukonychia, sublingual debris, koilonychias and onycholysis. Urasaki[5] found weakening of nails in gravid females. Similarly Kar *et al.*[18] and Vora *et al.*[19] reported brittle nails and onychomycosis in pregnant females. But there is scarce information present in literature about these changes.[14]

Increased sweating suggestive of hyperactivity of eccrine sweat glands was seen in our study. These results are in agreement with the published data.[5,7] The aspect of maternal discomfort attributed to these cutaneous changes was not studied.

Conclusion

Despite sample limitation, our study demonstrates the cutaneous changes that manifested during pregnancy. It can be concluded that early recognition of commonly found physiological skin changes of pregnancy and differentiating them from disease conditions, can avoid unnecessary investigations and management. This will ultimately assist in better patient care during antenatal period and can help the medics and paramedics to counsel and reassure the pregnant ladies. Further studies are needed to explore the impact of cutaneous changes on the psychosocial lives of pregnant women.

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