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Physiologic Skin Changes in Pregnancy among Patients of the Postpartum Ward in Shabih-Khani Hospital, Kashan in 2009

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Abstract: Pregnancy affects the entire organs of the pregnant woman including the skin. These changes are sometimes important from either the medical or cosmetic point of view. The objective of this study is to evaluate the physiologic skin changes during pregnancy among patients of the postpartum ward in Shabih-Khani Hospital, Kashan. This is a cross sectional descriptive study of 180 patients in the postpartum ward. Simple random sampling was used. The exclusion criteria were being a foreigner, multiparity and gestational age below 20 weeks. A check-list containing 13 demographic questions and 21 questions concerning the skin changes was the tool. Trained interviewers visited the patients before discharge and completed the questionnaires; the resulting data were coded and fed into the SPSS 16 software package; subsequently, tables of frequency were obtained. The resulting data were fed into the SPSS 16 software package; subsequently, frequency (present) was reported. Most of the patients were in the age range of 20-29 years (63.9%) at a gestational age of 36 weeks or higher. The observation included facial pigmentation 43.9% as well as spider angioma 11.7%, palpebral edema 30%, painful gingivitis 9.5%, body pigmentation 97.2%, striae 82.3%, hyperhidrosis 80% and hirsutism 17.2%. Acne was aggravated 26.7% and it was improved in 1.7%. An increase in sebum and cutaneous fat was observed in 25%. Considering the frequency of cutaneous changes during pregnancy, it is recommended to educate pregnant women about the necessary health care measures.

Key words: Skin, physiologic, pregnancy, package, gestational age, Iran

INTRODUCTION

Pregnancy affects all organs of the pregnant woman, causing some physiologic changes in the skin. These changes are sometimes important from either the medical or cosmetic point of view. It is essential to recognize the physiologic skin changes in order to abstain from unnecessary medical interventions which may prove aggressive and harmful. Furthermore, reassuring the pregnant woman of the physiologic nature of the changes will prevent her stress and unnecessary manipulations. (Muallem and Rubeiz, 2006).

As mentioned in the literatures, hyperpigmentation occurs in 90% of pregnancies due to melanin deposition in the macrophages of dermis and epidermis (Cunningham *et al*., 2009). Other cutaneous changes of pregnancy include mild hirsutism (Cunningham *et al*., 2009; Irene and Jenny, 2009) spider angioma, (Cunningham *et al*., 2009) palmar erythema (Cunningham *et al*., 2009) capillary hemangiomas of head and neck, acne, gingival involvement (Cunningham *et al*., 2009) hyperhidrosis and nail changes (Irene and Jenny, 2009).

According to William's textbook of obstetrics, chloasma occurs in half of pregnant women and remains for as long as 10 years in one third of women. (Cunningham *et al*., 2009). Kumar indicated an increase in growth of hairs on the head in 2.6% of Indian patients (Kumari *et al*., 2007) which constitutes another change in pregnancy. The prevalence of acne has been reported to be 2.4% in India (Kumari *et al*., 2007). The prevalence of edema has been reported to be 48.5% in Pakistan 6 and 9.8% in India (Kumari *et al*., 2007) with considerable diversity.

Since, most pregnant women are not aware of the nature of skin changes of pregnancy they are not protected against the possible complications. Some serious changes may be neglected or not followed up properly while some natural, harmless changes may cause great stress for the pregnant woman, harming both the mother and the fetus (Iranshahr *et al*., 2000).

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Thus, it is justified to pay sufficient attention to observation and examination of skin and mucosa in a pregnant woman. Furthermore, studying these changes and discovering new ways of diagnosis, evaluation and if necessary, prevention and control of physiologic and pathologic changes of pregnancy constitute an important measure for health of mothers and neonates. (Cunningham *et al*., 2009).

There is not any study about physiologic skin changes of pregnancy in Kashan. Considering the differences in features of Kashan region (such as genetic, nutritional, social and other features) with its warm and dry desert climate compared to the Western world and the cold regions this study was carried out to assess the physiologic skin changes of pregnancy among women in the Shabih-Khani Hospital, Kashan.

MATERIALS AND METHODS

This is a cross sectional descriptive study of 180 patients in the postpartum ward of Shabih-Khani Hospital during August 2009. According to a preliminary study with 30 patients who were randomly selected, basic information to determine the sample size (average skin changes 70%) were obtained. Accordingly, considering the acceptable error rate of 95 and 10% maximum acceptable error, minimum sample size was about 165. To achieve this volume of the samples, more checklists were distributed among the samples that was completed in 180 of them. Simple random sampling method was used. So that in the days of study, based on the current list of mothers in the postpartum ward, random sample of the total number of eligible women were selected. Then, the interviewers were complete the check-list. The mothers who delivered vaginal or by cesarean and hospitalized in the postpartum ward were included in the study. The exclusion criteria were being a foreigner, multiparity and gestational age below 20 weeks. A chek-list containing 13 demographic questions and 21 questions concerning the skin changes (Including pigmentation, acne, striae, edema, hirsutism and sweating) was the tool.

The interviewers were trained midwives and nurses who visited the patients prior to discharge and completed the questionnaires. If the patient wasn't agree with examinations in parts of her body, data was collected upon her claim. The resulting data were fed into the SPSS 16 software package subsequently, frequency (present) was reported. For the prevalence of skin changes, 95% confidence interval was calculated.

RESULTS AND DISCUSSION

The gestational age of most of the samples was 36 weeks or higher (63.9%). The mean age of mothers was 27.1±5.3 ranged from 16-41 years. High school diploma or higher education was 37.9%. Housewives were 92.8%. urban were 76.1% and the rest lived in rural areas. Exposure to cigarette smoke as passive smokers was 14.4%. There was Planned pregnancy 71.7% and first pregnancy 45.0% (Table 1).

Table 1: Personal features of women in the postpartum ward of Shabih-Khani Hospital, Kashan, 2009

Features	Frequency	Percent	95% CI lower	95% CI upper
Maternal age				
≤19	6	3.33	0.71	5.96
20-29	115	63.89	0.57	70.91
30-39	53	29.44	0.23	36.10
≥40	4	2.22	0.00	4.38
Gestational age				
20-29	22	12.22	0.07	17.01
39-35	43	23.89	0.18	30.12
≥36	115	63.89	0.57	70.91
Maternal education				
Illiterate/elementary	53	29.44	0.23	36.10
High school	47	26.11	0.20	32.53
Diploma	50	27.78	0.21	34.32
University	18	10.00	0.06	14.38
Maternal occupation				
Housewife	167	92.78	0.89	96.56
Government occupation	6	3.33	0.01	5.96
Free-lance	3	1.67	0.00	3.54
Working at home	2	1.11	0.00	2.64
Student	2	1.11	0.00	2.64
Type of living environment				
Urban	137	76.11	0.70	82.34
Rural	41	22.78	0.17	28.90
Cigarette smoking				
Active smoker	26	14.44	0.09	19.58
Passive smoker	0	0.00	0.00	0.00
Number of pregnancies				
1	81	45.00	0.38	52.27
2	53	29.44	0.23	36.10
≥3	44	24.44	0.18	30.72

The most common facial change was edema (52.2%). Non pitting edema of the face was observed only in the palpebrae in 30% in other regions of the face in 41.6% and in palpebrae and other regions of the face in 19.4% of patients.

Melasma was most commonly observed in the center of the face (12.2%). Increases in the number and color of facial nevi were observed in 22.7 and 15% of patients, respectively. Hirsutism was observed in 17.5% of patients, most commonly on the chin (16.6%).

Acne was improved in 1.7%, aggravated in 26.7% and remained unchanged in 45.4% of patients. Spider angioma was observed in 21% of patients. Gingivitis was commonly accompanied by pain (5.6%) and spider angioma occurred in 11.7% (Table 2).

The physiologic changes of body skin are shown in Table 3. The most common skin change of the body was pigmentation (97.2%). Body pigmentation occurred in areole (91.1%), nipple (84.4%) and in multiple areas (93.3%). The melanocytic nevi of the body increased in number in 16.1% and increased in color in 4.4% of patients. Hyperhidrosis was observed in 75.5% of patients. Spider angioma was not observed at all. The

Table 2: Frequency of physiologic skin changes in face of women in the postpartum ward of Shabih-Khani Hospital, Kashan, 2009

Facial skin change	Statements	Frequency	Percent	95% CI lower	95% CI upper
Melasma					
Forehead	Yes	35	19.44	13.66	25.23
Temples		6	3.33	0.71	5.96
Mandibular rami		1	0.56	0.00	1.64
Central face		46	25.56	19.18	31.93
Multifocal		20	11.11	6.52	15.70
	No	119	66.11	59.20	73.03
Facial nevi					
Increase in number	Yes	41	22.78	16.65	28.90
Increase in color		27	15.00	9.78	20.22
Increase in number and color		9	5.00	1.82	8.18
	No	123	68.33	61.54	75.13
Hirsutism					
Scalp	Yes	3	1.67	0.00	3.54
Around the face		12	6.67	3.02	10.31
Chin		19	10.56	6.07	15.04
Neck		9	5.00	1.82	8.18
Abdomen		1	0.56	0.00	1.64
Multifocal		13	7.22	3.44	11.00
	No	149	82.78	77.26	88.29
Acne					
Improvement	Yes	3	1.67	0.00	3.54
Aggravation		48	26.67	20.21	33.13
No change		89	49.44	42.14	56.75
	No	40	22.22	16.15	28.30
Facial edema					
Palpebral	Yes	54	30.00	23.31	36.69
Other regions of face		75	41.67	34.46	48.87
Palpebrae and other regions of face		35	19.44	13.66	25.23
	No	86	47.78	40.48	55.08
Gingivitis					
Pain	Yes	10	5.56	2.21	8.90
Ulcer		6	3.33	0.71	5.96
Epulis		5	2.78	0.38	5.18
Pain and epulis		1	0.56	0.00	1.64
	No	158	87.78	82.99	92.56
Spider angioma	Yes	21	11.67	6.98	16.36

most common changes of the hands were palmar erythema (21.6%) and hand edema (16.1%). The most common lesion of the feet was edema (62.2%). The most common changes in the perineum were striae of the inguinal area and buttocks (32.2%) and hirsutism in the inner thighs (21.1%).

In this study, facial pigmentation was observed in 43.9% of patients. The melasma was most commonly in the central area of the face (12.2%) followed by the forehead (9.4%), temples (3.4%) and mandible (0.6%). It was multifocal in 11.1% of cases. Other study reported melasma in 46.4% of patients in Pakistan which is consistent with the study (Muzaffar *et al*., 1998). In a study melasma was observed in 76% in central face, 23% on cheeks and 1% on mandibular rami (Guinot *et al*., 2010). Other study reported a melasma prevalence of 15.8% with 65.9% of zygomatic and 33.8% of central facial melasma and no case of mandibular melisma (Moin *et al*., 2006).

Table 3: Frequency of skin changes in body of women in the postpartum ward of Shabih-Khani Hospital, Kashan, 2009

Body skin changes	Statements	Frequency	Percent	95% CI lower	95% CI upper
Pigmentation					
Areola	Yes	164	91.1	86.95	95.27
Nipple		152	84.4	79.15	89.74
Linea Nigra		100	55.5	48.30	62.81
Linea Alba		75	41.6	34.46	48.87
Multiple areas		168	93.3	89.69	96.98
	No	5	2.8	0.38	5.18
Striae					
Abdomen	Yes	143	79.5	73.54	85.35
Breast		88	48.8	41.59	56.19
Buttocks		104	58.0	50.56	64.99
	No	31	17.7	11.71	22.74
Melanocytic nevi					
Increase in number	Yes	29	16.1	10.74	21.48
Increase in color		8	4.4	1.43	7.46
Increase in number and color		2	1.1	0.00	2.64
	No	145	80.6	74.77	86.34
Hyperhidrosis					
Perspiration	Yes	136	75.5	69.28	81.83
Heat rash		77	42.7	35.55	50.01
Increase in skin fat and seboma		45	25.0	18.67	31.33
Multiple changes		74	41.1	33.92	48.30
	No	36	20.0	14.16	25.84
Hand lesions					
Nail fragility	Yes	20	11.1	6.52	15.70
Onycholysis		1	0.6	0.00	1.64
Scattered spots		32	17.7	12.19	23.36
Tenar hypotenar erythema		39	21.6	15.65	27.69
Edema		29	16.1	10.74	21.48
Multiple changes		33	18.3	12.68	23.99
	No	109	60.6	53.42	67.70
Foot lesions					
Nail fragility	Yes	3	1.7	0.00	3.54
Onycholysis		0	0.0	0.00	0.00
Edema		112	62.2	55.14	69.31
Varicosis		1	0.6	0.00	1.64
Multiple changes		3	1.6	0.00	3.54
	No	67	37.2	30.16	44.28
Perineal changes					
Striae in the inguinal region and buttocks	Yes	58	32.2	25.40	39.05
Inner thigh hirsutism		38	21.1	15.15	27.07
Virilization		1	0.6	0.00	1.64
Multiple changes		14	7.8	3.87	11.69
	No	98	54.4	47.17	61.72

This study indicates an increase in facial nevi in 31.7% of cases. According to William's obstetrics, nevi may undergo melanocyte enlargement or increased melanin deposition during pregnancy (Cunningham *et al*., 2009).

This study observed hirsutism in 17.2% of cases; the common regions of involvement included 6.6% on face, 10.5% on chin, 5% on neck, 0.6% on abdomen and 7.2% on multiple areas. Also 1.6% of patients mentioned hair growth on the scalp. Other study mentioned hair and nail changes during pregnancy as normal changes of pregnancy (Muallem and Rubeiz, 2006; Tunzi and Gray, 2007). A study concluded that the diameter of hairs grows

during pregnancy (Nissimov and Elchalal, 2003). In the other study in India, 2.6% of patients noticed hair growth and proliferation in their scalp while 97.4% did not mention such a change (Kumari *et al*., 2007). Other study reported 12.8% of patients to notice changes in hair among which 38.9% mentioned hair thinning and 50% mentioned hair growth and proliferation (Muzaffar *et al*., 1998).

In this study, acne improved in 1.7% of cases, aggravated in 26.7% and remained without change in 47.4%. William's obstetrics mentions that acne is usually not affected by pregnancy (Cunningham *et al*., 2009). Others observed acne in 2.4% of cases in India. (Kumari *et al*., 2007).

The study observed spider angioma in 11.7% of patients. Others reported 34.2% of vascular changes in Pakistan which is the least frequent type of skin change in their study (Muzaffar *et al*., 1998). However, their reported figure is greater than that of the study. The Schmutz (2003) study reported stellar angiomas in 50-70% of black population in France (Schmutz, 2003).

In this study, the researchers observed non-pitting facial edema in palpebrae (30%), other regions of the face (41.6%) and both in palpebrae and other regions of the face and in 52.2% of the overall population in study. Foot and hand edema were observed in 62.2 and 16.1%, respectively. Other study reported a prevalence of 48.5% for edema, (Muzaffar *et al*., 1998) which is almost consistent with the study. Kumari observed non-pitting edema in 9.8% and abdominal edema in 0.4% (3 cases) (Kumari *et al*., 2007).

In this study, painful gingival inflammation was observed in 5.9%, ulcer in 3.3%, epulis in 3.7% and pain and epulis in 2.8% of cases. Other study observed non-pathologic gingivitis in 1.48% of cases (Kumari *et al*., 2007).

In this study, body pigmentation was observed in 91.1% in areola, 84.4%in nipple and 55.5% in linea nigra. It was multifocal in 93.3% of patients. Melanocytic nevi of the body increased in number in 16.1% increased in color in 4.4% and increased in number and color in 1.1% of cases. Other study reported a prevalence of 90.7% for pigmentation which is in line with the study. Their study mentioned pigmentation as the most frequent skin change (Muzaffar *et al*., 1998). Similar study reported 89.2% of cases to have linea nigra in Singapore (Rajasekaran and Tan, 2009). Kumari *et al*. (2007) reported hyperpigmentation in 91.4% of cases, most commonly in linea nigra. They observed increase in color intensity of areola 78.4%, followed by abdomen, face buttocks, scars, breast, axilla and neck as the most common sites of pigmentation. Theiy study showed General darkening of skin in 66% of patients (Kumari *et al*., 2007).

In this study, the researchers observed hyperhidrosis in 75.5%, heat rash in 42.7% increased skin fat and seboma in 25% and all three entities in 41.1% of patients. There is a reported of palmar hypohidrosis in 22% and palmar hyperhidrosis in 6% ofcases (Ansar *et al*., 1996).

The researchers observed ungular fragility in 11.1%, palmar changes as scattered spots in 17.7% and edema in 16.1% of patients. The foot lesions included nail fragility in 1.7%, edema in 62.2% and edema and varicosis in 1.6% of cases. William's mentions palmar erythema in two thirds of white women and one third of black women. (Cunningham *et al*., 2009).

In this study, striae were observed in 82.3% of cases, most commonly on the abdomen and then the buttocks. Other study reported striae of different body regions in 77.1% of patients (Muzaffar *et al*., 1998). A study in Pakistan observed striae in 69.9% of cases, mostly on the abdomen (Rajasekaran and Tan, 2009). Ghasemi *et al*. (2007) reported striae in 87.7% of cases in Tehran (Ghasemi *et al*., 2007). Osman *et al*. (2007) reported striae in 60% of their patients. In their study, the women with striae were significantly younger and gained more weight during pregnancy (Osman *et al*., 2007). A study reported striae in 79.8% of cases, most frequently below abdomen (Kumari *et al*., 2007). Kroumpouzo reported that the striae are uncommon in Asian and African-American women and seem to follow a familial pattern (Kroumpouzos and Cohen, 2001). The study observed perineal changes as striae in the inguinal region and buttocks in 32.2%, hirsutism of inner thighs in 21.1%, virilization in 0.6% and their combination in 7.8% of patients.

CONCLUSION

Considering the prevalence of skin changes in pregnancy, it seems reasonable to provide education about the necessary measures. Thus, healthcare personnel and planners may include appropriate material pertaining to this issue in maternity and pregnancy educational programs held by their centers.

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