

A Study of Physiological Skin Changes in Neonates of a Tertiary Care Centre from Eastern India

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Abstract:

Introduction: The spectrum of skin changes in neonates ranges from completely physiological to grossly pathological entities. Prevalence of physiological skin changes in neonates was reported to be 41% to 72%. Present study was undertaken to analyze the pattern of physiological skin conditions in neonates of eastern part of the country.

Aims and Objectives: (1) To determine the proportion of physiological skin conditions and their clinical pattern among neonates of a tertiary care hospital in eastern India. (2) To establish the relationship between various maternal factors, neonatal factors and the physiological dermatoses.

Materials and Methods: A hospital based, cross sectional study conducted on 500 neonates delivered in the department of obstetrics and gynaecology for a period of 1 year. Maternal history and demographic details were taken from the informant. Sex, age, birth weight of the neonate were recorded. Statistical analysis: Collected data was analysed using Chi-Square test and Fisher's exact test. The analysis was carried out using SPSS software.

Results: Among the 500 neonates examined, 325 (65%) were males and 175 (35%) were females. Physiological changes were most commonly encountered in 340 babies (68%). Among the physiological conditions, physiological desquamation was frequently encountered in 108 (21.6%) babies followed by lanugo hairs in 105 (21%), sebaceous gland hyperplasia in 35 (7%) and cutis marmorata in 30 (6%) neonates. Lanugo hairs and cutis marmorata were significantly high among preterm babies. Conditions like physiological desquamation and lanugo hairs were frequent between 3-5 days of age.

Conclusion: Newborn babies may have skin changes which usually causes apprehension in the parents hence they need to be thoroughly examined and treated appropriately to avoid unnecessary expenditure on investigations and treatment.

Keywords: Physiological Skin Changes, Neonate, Milia.

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Introduction

By birth, the transition from sterile, aqueous medium to a dry environment poses different challenges to the neonatal skin.[1] Neonatal period is defined as the first four weeks of life during which the skin is delicate, thinner, produces lesser sweat and sebum with weaker intercellular attachments.[2] The spectrum of skin conditions ranges from completely physiological to grossly pathological entities.

Prevalence of neonatal dermatoses in different studies varies from 57% - 99.3%.[3] Prevalence of physiological skin changes in neonates was reported to be 41% to 72%. [4,5] Factors influencing pattern of cutaneous changes are heredity, race, demography, maternal health, maturity, education, socioeconomic status, customs, hygiene, environmental factors and mode of delivery.[1]

Present study was undertaken to analyze the pattern of physiological skin conditions in neonates of eastern part of the country.

Table 1: Physiological Conditions in the Newborn [6]

Vernix caseosa	Harlequin color changes
Physiological desquamation	Acrocyanosis
Epstein pearls and Bohr nodules	Physiological jaundice
Milia	Cutis marmorata
Sebaceous gland hyperplasia	Neonatal occipital alopecia
	Lanugo hairs

Aims and Objectives

1. To determine the proportion of physiological skin conditions and their clinical pattern among neonates of a tertiary care hospital in eastern India.
2. To establish the relationship between various maternal factors, neonatal factors and the physiological dermatoses.

Materials and Methods

A hospital based, cross sectional study conducted on 500 neonates delivered in the department of obstetrics and gynaecology for a period of 1 year. Maternal history and demographic details were taken from the informant. Sex, age, birth weight of the neonate were recorded.

Inclusion Criteria: All the neonates within first four weeks of life, irrespective of the gestational age, sex, religion and mode of delivery were included in the study.

Exclusion Criteria: Neonates whose mothers were unwilling to give consent to let their babies examined and photographed were excluded from the study.

Statistical Analysis: Collected data was analysed by frequency, percentage and comparison was done using Chi-Square test and Fisher's exact test. Level of significance in the study was 0.05. The analysis was carried out using SPSS software (Version 21).

Results

Among the 500 neonates examined, 325 (65%) were males and 175 (35%) were females. Maximum number of neonates had birth weight between 1.5 – 2.49 kgs with mean birth weight of 2.2kgs. 275(55%) neonates were born at term, 221 (44.2%) were preterm and 4 (0.8%) were post-term. Out of 500 neonates, history of consanguinity was present in 20 (4%) births. Normal delivery accounted to 282 (56.4%) neonates of which forceps assisted were 26(5.2%) and vacuum assisted were 4 (0.8%), rest 218(43.6%) by caesarean section. Most of the mothers were Uniparous (60.8%) and in the age group of 21-25 years (45.6%) with mean age of 24.4 years

Physiological changes were most commonly encountered in 340 (68%). Among the physiological conditions, physiological desquamation was frequently encountered in 108 (21.6%) babies followed by lanugo hairs in 105 (21%), sebaceous gland hyperplasia in 35 (7%) and cutis marmorata in 30 (6%) neonates.

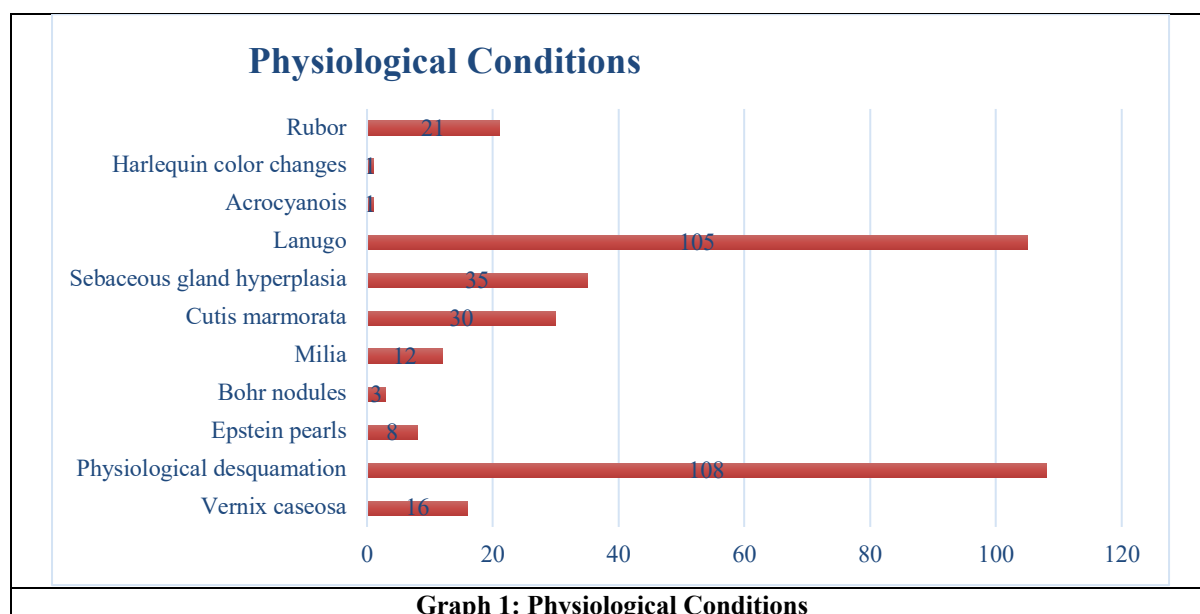


Table 2:

Sl.no	Skin lesions	No. of cases	Percentage (n=500)
1	Physiological condition	340	68%
a	Vernix caseosa	16	3.2
b	Physiological desquamation	108	21.6
c	Epstein pearls	8	1.6
d	Bohn's nodules	3	0.6
e	Milia	12	2.4
f	Cutis marmorata	30	6.0
g	Sebaceous gland hyperplasia	35	7.0
h	Lanugo hairs	105	21.0
i	Acrocyanosis	1	0.2
j	Harlequin color changes	1	0.2
k	Rubor	21	4.2

Table 3: Association of skin lesions with gender of the neonate

Skin condition	F		M		P value (chi square/Fishers exact test)
	Count	Row N %	count	Row N %	
VC	5	31.3%	11	68.8%	0.749
PD	44	40.7%	64	59.3%	0.158
SGH	8	22.9%	27	77.1%	0.118
CM	7	23.3%	23	76.7%	0.167
MI	5	41.7%	7	58.3%	0.624
L	41	39.0%	64	61.0%	0.328
EP	3	37.5%	5	62.5%	0.881
BN	1	33.3%	2	66.7%	0.952
AC	1	100.0%	0	.0%	0.173

Sig-Significant (p<0.05), HS-Highly significant (p<0.01)

There was no statistically significant difference in distribution of skin lesions among males and females.

Table 4: Association of birth weight (kgs) with skin lesions

Condition	<1		1-1.49		1.5-2.49		2.5-4		(chi square/Fishers exact test) p	
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %		
VC	0	0.0%	3	18.8%	5	31.3%	8	50.0%	0.460	
PD	0	0.0%	17	15.7%	55	50.9%	36	33.3%	0.147	
SB	2	2.9%	13	19.1%	31	45.6%	22	32.4%	0.266	
SGH	0	0.0%	3	8.6%	17	48.6%	15	42.9%	0.679	
CM	1	3.3%	7	23.3%	15	50.0%	7	23.3%	0.159	
MI	0	0.0%	0	0.0%	5	41.7%	7	58.3%	0.351	
L	4	3.8%	26	24.8%	63	60.0%	12	11.4%	0.000	HS
EP	0	0.0%	0	0.0%	5	62.5%	3	37.5%	0.676	
BN	0	0.0%	0	0.0%	1	33.3%	2	66.7%	0.742	
AC	0	0.0%	0	0.0%	1	100.0%	0	0.0%	0.781	

Sig-Significant (p<0.05), HS-Highly significant p<0.01

Lanugo hairs are seen more commonly in neonates weighing between 1.5 to 2.49 kgs (LBW) and the results is statistically significant.

Table 5: Association of skin lesions with maturity of the newborn

Condition	Preterm		Term		Post Term		P value (Fishers exact test)	
	Count	Row N %	Count	0.099	Count	Row N %		
VC	3	18.8%	13	0.382	0	0.0%	0.099	
PD	47	43.5%	59	0.053	2	1.9%	0.382	
SB	39	57.4%	29	0.563	0	0.0%	0.053	
SGH	13	37.1%	22	0.001	0	0.0%	0.563	
CM	23	76.7%	7	0.135	0	0.0%	0.001	HS
MI	2	16.7%	10	0.000	0	0.0%	0.135	
L	78	74.3%	26	0.206	1	1.0%	0.000	HS
EP	2	25.0%	6	0.291	0	0.0%	0.513	
BN	0	0.0%	3	0.036	0	0.0%	0.291	
AC	1	100.0%	0	0.291	0	0.0%	0.531	

Sig-Significant ($p < 0.05$), HS-Highly significant ($p < 0.01$)
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With respect to maturity, preterm babies showed significant association with lanugo hairs and cutis marmorata. Conditions like physiological desquamation and lanugo hairs were frequent between 3-5 days of age. These associations were statistically significant.

Present study did not show any association of skin conditions with age of the mother except cutis mar-

morata which was commonly encountered in mothers between 26-30 years. Lanugo hair was seen more commonly during first week of life and the association was significant statistically.

Vernix caseosa is observed commonly in uniparous and their difference is statistically significant. Skin lesions did not show any significant relation with history of consanguinity and mode of delivery.



Figure 1: Lanugo hairs



Figure 2: Showing physiological scaling



Figure 3: Sebaceous gland hyperplasia



Figure 4: Milia

Discussion

Prevalence of physiological skin changes in neonates was reported to be 41% to 72%. [4,5] Bryan and Chakrabarty studied 500 newborns and observed physiological skin changes in 68.8%. [7] Physiological dermatoses were seen in 340(68%) of 500 neonates in our study. Our study results are comparable to above mentioned studies. In a study conducted by Baruah et al, physiological dermatoses were seen in 100% of neonates. [8]

Most frequently observed finding in our study was physiological desquamation in 21.6%. The incidence of desquamation varied from 7.2 to 83% in various studies. [4]

Lanugo hairs observed in 21% neonates showed statistically significant association with preterm and LBW babies which is comparable to study by Gorur et al. [9] Gokdemir et al., Nobby and Chakrabarty, Sachdeva et al, found the incidence of lanugo hair in their studies to be 13.99, 14.6, and 14.4 respectively. [3,7,4]

Sebaceous gland hyperplasia observed in 7% cases in our study is in contrast to 21. 4% in a study conducted by sachdeva et al and there was no significant correlation with gender or gestational age. [4]

Cutis marmorata was noted in 6% of neonates. In other studies, the incidence of same were 1.9% and 6.5%. [10] Our study also found significant association of cutis marmorata with preterm babies which may be a result of vasomotor instability. This difference in the incidence may be due to temperature variation and colour difference in various races.

Milia was seen in 2.4% cases. A varied incidence of 4.2% to 94.8% has been reported which explains lower proportion of cases in our study. [5]

In our study Epstein pearls and Bohn's nodules were 1.6% and 0.6% cases respectively. The incidence of Epstein pearls was 1.8% in a study by Gudurpenu et al which is in concordance with our study. [11] Sachdeva et al observed in 61% of cases which is in contrast to our study. [4]

Conclusion

Neonatal skin is a window to broad spectrum of cutaneous manifestations which usually causes anxiety. Most of them are physiological and self-limiting. But a proportion needs thorough workup. Hence newborn babies with skin changes needs to be thoroughly examined and treated appropriately to avoid unnecessary expenditure on investigations and treatment.

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