International Journal of Health Sciences and Research
www.ijhsr.org ISSN: 2249-9571

Original Research Article

A Clinical Study of Physiological Skin Manifestations in Neonates

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ABSTRACT

Background: Human skin is a complex and dynamic organ, with multiple functions like barrier action against toxins and infections, water and electrolyte excretion, lipid storage, insulation and tactile sensation and last but not the least thermoregulation. Neonatal period is the first four weeks of extra uterine life. The skin in neonate is thinner and is undergoing maturation to adapt to comparatively dry environment as compared to in utero. A number of innocent rashes occur in neonates. But early recognition is important to distinguish these lesions from more serious disorders. In this study, our purpose was to determine the frequency of physiological skin manifestations in neonates.

Key words: neonate, physiological skin manifestations

INTRODUCTION

A number of innocent rashes occur in neonates. They are usually transient and self limited and thus require no therapy. But early recognition is important to distinguish these lesions from more serious disorders. Neonatal skin differs greatly from adult skin. The most commonly detected lesions are considered transient as a result of physiological response and limited to the first several days or weeks of life. Therefore, these conditions are rarely examined by either paediatricians or by dermatologists. Skin rashes are common in the neonate but they often cause parental anxiety. Many of these are transient and physiological, but some may require additional work up to rule a more serious disorder. Hence it is important for the pediatrician as well as for the dermatologist to recognize these physiological states that can present in a normal neonate.

Skin is the largest organ system in the body. It comprises approximately 13% of body weight in the neonate as compared to 3% of the body weight of the adult. Just as the other organs are immature with decreasing gestational age, the skin also is immature; however, with exposure to the post-natal environment, skin undergoes changes rapidly to enhance maturation. Skin plays an important role in fluid balance and temperature regulation. Mature skin acts as a barrier to invading microbes, while immature skin may systemically absorb substances that result in adverse effects.

At birth, the skin is covered by a whitish, greasy film composed of lipids called vernix caseosa. This dries rapidly and comes easily within few hours of birth. Its colour may indicate intrauterine problems such as golden yellow colour in post mature babies and haemolytic disease of the newborn. [1]

The appearance of the skin can provide with clues regarding the health status of the neonate, for example, gestational age or nutritional status. Being aware of common skin lesions found in the

neonatal period will alert us to symptoms of systemic or cutaneous disorders. Development of a care plan to protect the skin from iatrogenic damage will help protect the integrity of the skin and keep it as the neonate's first line of defense. [2]

The premature infant assumes the challenge of independent life despite immaturity of essential functions. All the skin layers are thinner in preterm infant than the term infant. In extremely premature infant the skin is sticky, friable and transparent. The lanugo hairs are absent. As gestation progresses, the skin becomes less transparent and increasingly peeling with surface cracking, indicative of a thickening stratum corneum. While lanugo hair density peaks and then regresses. [3] A thorough knowledge of the neonatal skin biology and better understanding of the principles of infant skin care can minimize risks and costs to this special population. [4,5]

MATERIALS AND METHODS

This hospital based cross-sectional, prospective study was conducted on 120 neonates attending the dermatology OPD and neonates admitted in NICU, Pediatric and Postnatal ward of tertiary teaching hospital. Detailed history of neonatal skin lesions regarding onset and duration was taken from parents. A thorough clinical examination of all neonates along with following relevant investigations in selected cases was performed.

Neonates within first 4 weeks of life irrespective of gestational age, sex, and mode of delivery were included in the study. Mothers unwilling to give consent for relevant investigations of neonates were excluded from the study.

Detailed history was recorded especially age of the mother, parity of mother, history of consanguinity, mode of delivery and history of maternal illness during pregnancy. The neonates were examined thoroughly in day light with accurate definition of morphology of skin lesions and findings were recorded. The sex, birth weight and age at the time of examination were noted in each case. In most instances, diagnosis of disorder was based on clinical impression. Relevant investigations like Smear of vesicle fluid, Pus culture and sensitivity and Examination of scrapings were done in infectious disorders done in some neonates

Statistical Analysis: The observations pertaining to parameters under study among the newborn babies are expressed in percentage.

RESULTS

Of 120 newborns, 64(53.3%) were male, 56 (46.7%) were female, these, 69 (57.5%) were born at term, 41 (34.2%) were preterm, 10 (8.3%) postterm.

Thirty one (25.9%) newborn weighed < 2.50 kg, eighty nine (74.1%) weighed > 2.50 kg, history of consanguinity was present in14 (11.7%), absent in 106(88.3%).

Eighty seven (72.5%) newborns were delivered by normal vaginal route, thirty three (27.5 %) by Cesarean section. Eighty five women were primipara (70.8%), thirty five were multipara(29.2%).

Table 1: Sex ratio in newborns

Gender	No	%
Male	64	53.3
Female	56	46.7
TOTAL	120	100

Table 2: Birth weight in newborns

Birth weight in kg	No	%
< 2.5	31	25.9
2.5 +	89	74.1
TOTAL	120	100

Table 3: Percentage of physiological skin lesions.

SR NO	PHYSIOLOGICAL SKIN LESIONS	NO	%
1	VERNIX CASEOSA	4	3.3
2	PHYSIOLOGICAL SCALING OF NEWBORN	17	14.2
3	MILIA	33	27.5
4	EPSTEIN PEARLS	60	50.0
5	MONGOLIAN SPOTS	93	77.5
6	PHYSIOLOGICAL JAUNDICE OF NEWBORN	2	1.7
7	HARLEQUIN COLOR CHANGE	1	0.8

Among various physiological skin lesions seen in newborns, Mongolian spots were seen in 93 (77.5%), followed by Epstein pearls 60(50%), milia 33(27.5),

physiological scaling of newborn 17(14.2%), vernix caseosa 4(3.3%), physiological jaundice of newborn 2(1.7%), harlequin color change 1(0.8%).

Table 4: Percentage of physiological skin lesions with correlation to gender.

SR NO	PHYSIOLOGICAL SKIN LESIONS	FEMALE (56)	%	MALE (64)	%
1	VERNIX CASEOSA	2	3.6	2	3.1
2	PHYSIOLOGICAL SCALING OF NEWBORN	8	14.3	9	14.1
3	MILIA	17	30.4	16	25.0
4	EPSTEIN PEARLS	29	51.8	31	48.4
5	MONGOLIAN SPOTS	38	67.9	55	85.9
6	PHYSIOLOGICAL JAUNDICE OF NEWBORN	1	1.8	1	1.6
7	HERLEQUIN COLOR CHANGE	1	1.8	0	0

DISCUSSION

Mongolian spot has been shown to be a good example of inter-racial difference. The prevalence of Mongolian spot has been as high as 80 to 90% in Asians [7,8] and it has been as low as 3 to 10% in Caucasians. [9,10] In Indians the prevalence varies from 72-89%. [7, 11, 12]

In present study, 93(77.5%) newborns had this birthmark, similar to that of the study conducted by Dash et al. [6] Mostly Mongolian spots were seen in lumbosacral area (94.54%), and rest in atypical sites 3(5.45%). Atypical sites for Mongolian spots were upper back, arms and forearms seen in other neonates.

Epstein pearls were seen in 60 (50%) neonates, with commonest site of location being midline of the hard palate in 50(83.30%) neonates. They occur commonly in 64-89% of normal neonates and are common in Caucasian infants. The similar prevalence rate has been noted in an Indian study conducted by Nanda et al. [11]

Physiological scaling was seen in 17 (14.2%) neonates in the present study, compared to a study of Australian neonates, where the frequency of occurrence was 65%.13

It was seen in 17(24.6%) full-term neonates, compared to other studies' [7,14] where desquamation was not seen in preterm neonates.

Vernix caseosa was seen in 4(3.3%) neonates. It was observed most commonly on 1st day of life. Vernix caseosa was seen in 7.7% neonates in the study conducted by Haveri F and Inamdar A. [15]

Milia was seen in 33(27.5%) ,similar to that of Indian studies by Kulkarni et al. [12] and Meenakshi et al. [15]

Physiological jaundice of newborn was seen in 2(1.7%) babies both of whom were preterm. Nobbay et al [17] reported 103 cases of jaundice amongst 500 cases with no reference to gestational age.

Harlequin color change was seen in 1(0.8%) baby which was preterm. This finding is consistent with the fact that premature infants are more commonly affected than full term infants. [18]

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How to cite this article: Deshpande AB, Tolat SN. A clinical study of physiological skin manifestations in neonates. Int J Health Sci Res. 2019; 9(3):43-46.

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