

Prevalence and presentation of cutaneous lesions in healthy neonates: A single-center study from Eastern India

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ABSTRACT

Background: Skin lesions are much common and specific to neonates. They vary according to age, sex, and geographic region. **Objectives:** The objective of this study was to determine the prevalence of different cutaneous lesions in newborns and their association with the type of delivery, age, sex, and maturity. **Materials and Methods:** This study was done in neonatal follow-up clinic of department of Pediatrics, Maharaja Krushna Chandra Gajapati Medical College, Berhampur, Odisha. All the healthy newborns coming to the OPD from January 2015 to December 2016 were included in this prospective study, and their details were recorded in case recording format after taking informed consent from their guardians. Admitted patients were excluded from the study. Statistical assessments were the done by SPSS software. **Results:** Out of 500 neonates, skin lesions were found in 366 (73.2%) patients. Physiological cutaneous lesions were most common, consisting 259 (70.7%) neonates. Out of the physiological lesions, benign transient lesions were seen in 163 (44.6%), out of which 95 (25.9%) had papulopustular dermatoses followed by erythema toxicum in 48 (13.1%) cases. Birthmarks were seen in 138 (37.8%) cases; pigmentary birthmarks 89 (24.5%) being the most common birthmarks followed by Mongolian spots in 71 (19.4%) cases. Pathological lesions were seen in 107 (29.3%) cases, of which nappy rash was detected in 65 (18.01%) cases. Term and male babies had a higher incidence of skin lesions. **Conclusion:** Benign lesions are the most common group of neonatal cutaneous manifestations which is followed by birthmarks. Conditions such as nappy rash and contact dermatitis are common pathological lesions and majority of them are preventable. Differentiation of the physiologic skin lesions from the pathologic ones is essential to avoid unnecessary therapeutic interventions.

Key words: Cutaneous lesions, Follow-up clinic, Neonates

Skin is the largest external organ of the body which protects the internal organs, serves as anatomical barrier to infection, contributes to thermoregulation, contains insulating fats, excretes electrolytes, and provides tactile sensory inputs [1]. In contrast to adults, the neonatal skin is thinner, delicate, has weaker intercellular attachments, and produces fewer sweat and sebaceous secretions, and above all is more susceptible to infections [2]. Coated with vernix caseosa, neonatal skin has antimicrobial properties which confers protection both intrauterine and postnatal [3]. *In utero*, baby's skin is well protected by amniotic fluid. After birth, baby's skin is vulnerable to develop a variety of physiological and pathological lesions such as transient lesions, nappy dermatitis and related disorders, infective lesions, blisters, and birthmarks [4]. Neonatal dermatological conditions vary widely from transient physiological to grossly pathological ones [5]. Majority of neonatal skin lesions being physiological, transient, and self-limiting need only reassurance in contrast to a few needing interventions [6,7].

However, due to poor knowledge and diagnostic dilemma, many benign healthy neonates get treated by many ointments and powders by local doctors, some pediatricians, and some dermatologists [8]. These types of therapy do more harm to delicate neonatal skin. The objective of this study was to find the prevalence and clinico epidemiological profile of skin conditions of healthy neonates which will help to differentiate the treatable and untreatable conditions of neonates. This study will help common people not to get panic in case of sporadic skin lesions in a healthy neonate.

MATERIALS AND METHODS

This prospective descriptive study was done in neonatal follow-up clinic in department of Pediatrics, Maharaja Krushna Chandra Gajapati Medical College, Berhampur, Odisha. The Ethical Committee of MKCG Medical College had approved the study. All the healthy newborns (below 1 month of age) presenting to

the neonatal clinic from January 2015 to December 2016 were included in the study, and their details were recorded in case recording format after obtaining informed consent from their guardians. The photographs were taken which did not disclose any ones identity. The total number of patients included in the study was 500. All patients were subjected to the full history taking including prenatal, natal, and postnatal, thorough clinical examination with special concern to dermatological examination describing the clinical appearance, distribution, configuration, and morphology of skin disease. All the diagnoses were made by clinical examination only with the help of dermatologist opinion. Benign transient lesions were defined as transient lesions which usually disappear by the 2nd week of birth. These included erythema toxicum, neonatal acne, milia, and miliaria. Pathological lesions were the lesions which needed either definite management or indicated any systemic disease or syndrome.

Laboratory investigations in the form of complete blood count, C-reactive protein (CRP), and blood culture were conducted in suspected cases of neonatal sepsis, and if those parameters were abnormal, they were excluded from the study. The data recorded were age, gender, maturity, mode of delivery, birth weight, maternal diseases, clinical diagnosis, and dermatological diagnosis. All babies who got admitted to indoor beds, high CRP, high total leukocyte count and abnormality in blood culture, jaundice, and cyanosis were excluded from the study. Statistical assessments were done by SPSS software version 22. The results were expressed as counts and percentages for qualitative variables and as medians and ranges for discrete variables. Value of $p < 0.05$ was considered to be statistically significant.

RESULTS

A total of 500 neonates were included in the study. Out of them, skin lesions were found in 366 (73.2%) patients. Physiological cutaneous lesions were the most common lesions, seen in 259 (70.7%) neonates. Out of the physiological lesions, benign transient lesions were seen in 163 (44.6%) and birthmarks in 138 (37.8%) cases. Out of benign transient lesions, 95 (25.9%) had papulopustular dermatoses followed by erythema toxicum in 48 (13.1%) cases. All the benign transient lesions were healed without any medications in first follow-up which was done after 1st week of life. Pigmentary birthmarks 89 (24.5%) were most common among all the birthmarks followed by Mongolian spots seen in 71 (19.4%) neonates.

Pathological lesions were seen in 107 (29.3%) cases; of which nappy rash was detected in 65 (18.01%) cases. There was one case each of incontinentia pigmenti, hypomelanosis of Ito, and ash-leaf macule (Table 1). Skin lesions were more frequent in preterm and were statistically significant as shown in Table 2. It was more common in females and in babies delivered by caesarean section LSCS; however, the relations were insignificant statistically (Table 2). Clinical photographs of some neonatal skin conditions are shown in Figs. 1-12.

Table 1: Distribution of cutaneous lesions in neonates (n=366)

Item	Number (%)
Physiological lesions	259 (70.7)
Benign transient lesions of newborn	163 (44.6)
Erythema toxicum	48 (13.1)
Acrocyanosis	8 (2.16)
Cutis marmorata	5 (1.3)
Pustular dermatoses	95 (25.9)
Fordyce spot	13 (3.5)
Miliaria	40 (10.9)
Milia	21 (5.7)
Neonatal acne	27 (7.3)
Birthmarks	138 (37.8)
Pigmentary birthmarks	89 (24.5)
Mongolian spot	71 (19.4)
Congenital nevus	13 (3.5)
Vascular birthmarks	26 (7.2)
Salmon patch	14 (3.8)
Hemangioma	9 (2.4)
Accessory nipple	6 (1.6)
Accessory tragus	8 (2.1)
Stork bite	3 (0.08)
Pathological lesions	107 (29.3)
Nappy rash	65 (18.01)
Seborrheic dermatitis	30 (8.2)
Monilial dermatitis	7 (1.9)
Ichthyosis	2 (0.5)
Skin tag in the hand	4 (1.09)
Preauricular skin tag	3 (0.8)
Epidermolysis bullosa	5 (1.3)
Aplasia cutis	5 (1.3)
Suckling blisters	4 (1.09)
Ectodermal dysplasia	3 (0.8)
Port-wine stain	3 (0.8)
Warts	2 (0.5)
Hypomelanosis of Ito	1 (0.27)
Incontinentia Pigmenti	1 (0.27)
Ash-leaf macules	1 (0.27)
Total	366 (100)

Table 2: Other parameters (n=500)

Parameters	Total number	Skin problems	Percent	p value
Term	346	223	64.4	0.0137
Preterm	154	143	92.8	
NVD	371	254	68.4	0.1252
LSCS	129	112	86.8	
Male	289	201	69.5	0.4057
Female	211	165	78.2	

NVD: Normal vaginal delivery, LSCS: Lower segment caesarean section



Figure 1: Hemangioma abdomen



Figure 4: Milia, face, and chest



Figure 2: Nevus on forehead



Figure 5: Portwine stain & Milia



Figure 3: Ash-leaf macule, left buttock



Figure 6: Seborrheic dermatitis

DISCUSSION

The appreciation of normal phenomena and their differentiation from the more significant cutaneous disorders of the neonate is critical. Although many of them are self-limiting, some need further workup. Worldwide, different studies report rising trend of neonatal skin lesions. The present study revealed that the incidence

of neonatal skin lesions is 73.2% which is almost similar to another Indian study done by Sachdeva et al. [8]. The incidence is high in preterm, and it was statistically significant. It can be explained by immature cutaneous system and unhygienic practices in our area. The high incidence of neonatal skin conditions in India can be explained by climatic and racial variations [7]. Besides it in India, many neonates come to notice of the doctor when they are ill. This problem increases the incidence significantly. Greater propensity of lesions was observed in female newborns as well as in babies delivered by caesarean section, but they were statistically insignificant.



Figure 7: Nappy rash on groin



Figure 10: Café au lait spots, back



Figure 8: Nappy rash on buttock



Figure 11: Collodion baby



Figure 9: Maculopapular rash



Figure 12: Port-wine stain

Transient lesions were most common in our study, seen in 44.6% of all the physiological skin lesions which is similar to other studies [9]. We found papulopustular lesion in 25.9% of cases and miliaria in 10.9% of cases, which is comparable to the study by Sachdeva et al. [8]. Aplasia cutis and skin tags were noted in 1.09% and in 1.5% of neonates, respectively, which is in contrast to reports by El-Moneim and El-Dawela (3.5%) [7]. These variations of sporadic diseases are seen globally. In our

study, sucking blisters were found in 1.09% and Mongolian spots in 19.4% of cases as compared to 1.5% and 20.5% of cases, respectively, by Shehab et al. from Egypt. This is in contrast to reports on Iranian neonates having 71.3% incidence [9]. These contrasting incidences are due to geographic and racial differences. Melanocytic nevi were detected in 3.5% of cases similar to the study by Chaithirayanon and Chunharas (2.4%) [10].

We found nappy rash in 18.01% of cases at par with Shehab et al. (15.2%) and the study by Javad [9,13] which may be due to hot humid weather and improper hygiene. All cases of moniliasis (1.9%) were seen in preterm babies, which is at par with the study results of Ferahbas et al. [12]. Salmon patches, the most common vascular birthmarks, were seen in 3.8% of cases which was at par with the study by others [7,8,13]. Conditions such as nappy rash and contact dermatitis are the most common pathological lesions, and the majority of them are preventable. All involved in neonatal care should be aware of benign lesions along with preventable aspects of neonatal dermatitis. Differentiation of the physiologic skin lesions from the pathologic ones is mandatory as treatment is needed when the lesion is pathological while watchful observation may be the only treatment required for the physiological lesions. The frequency of these neonatal disorders differs with racial, environmental, and socioeconomic status of the family. However, further studies about different factors affecting these dermatoses are still needed in this category of population.

CONCLUSION

Benign lesions are the most common group of neonatal cutaneous manifestations followed by birthmarks. Conditions such as nappy rash and contact dermatitis are the most common pathological lesions, and the majority of them are preventable. Differentiation of the physiologic skin lesions from the pathologic ones is essential to avoid unnecessary therapeutic interventions.

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