

Prevalence of skin lesions in special newborn care unit: A single centre study

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Abstract

Objectives: The prevalence of skin lesions in newborns varies among different sex, and race. There are limited reports of skin lesions among Indian neonates. This study was conducted to determine the prevalence of different cutaneous lesions in newborns and evaluates the association between age, gender, maturity, route of delivery, birth weight, maternal disease, and different skin lesion. **Patients and Methods:** All of the subjects were healthy newborn infants, who were born between April 2013 and March 2014. They were enrolled and examined for cutaneous lesions by pediatrician and dermatologists. All patients were examined within the first 7 days of birth. **Results:** A total of 177 neonates were included in this descriptive prospective cohort study. Skin disorders were found in 132 neonates out of 177 (74.6%) of cases and 45 (25.4%) of cases were free of any skin disorder. Benign transient lesions of newborn were the most common category of neonatal skin disorders that were seen in 54 neonates (41% of all cases), followed in frequency by birth marks that were noticed in 45 neonates (34% of all cases). Napkin dermatitis was considered the third common category of neonatal skin diseases 20 (15.2%). Genodermatoses were only noticed in 3% of cases. Other (6.8%) of cases were [epidermolysis bullosae (1.5%), cutis aplasia congenital (2.3%), histiocytosis X (1.5%), Suckling blisters (1.5%)]. **Conclusion:** Benign transient lesions of the newborn were the most common category of neonatal skin disorders, followed in frequency by birth marks. The prevalence of different pathological skin lesion was not common. The prevalence of the skin lesions of newborns are different in this study, these could be due to environmental factors, race, the age of the infant and the period of observation of the studied subjects.

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INTRODUCTION

The skin is the most visible and easily accessible organ of the body. It serves many purposes, acting as a barrier against infection, protecting internal organs, contributing to thermoregulation, storing insulating fats, excreting electrolytes and providing tactile sensory input.¹ The skin of the infant differs from that of the adult, in that it is thinner, delicate, has weaker intercellular attachments and produces fewer sweat and sebaceous gland secretions and is more susceptible to several infections.² Neonatal skin plays an significant role with vernix caseosa through their

antimicrobial properties to protect the neonate in utero and after birth.³ Skin disorders are commonly seen during the neonatal period and they may be benign transient lesions, napkin dermatitis and related disorders, lesions of infections, blistering dermatoses, genodermatoses, or birthmarks.⁴ A large number of changes from transient physiological to grossly pathological lesions are seen in the skin of a neonate.⁵ The majority of the disorders in the newborn is physiological, transient, and self-limited and require no therapy. A working knowledge of both normal and abnormal cutaneous lesions of the neonates is required to determine, which skin lesion require early intervention.⁶ Several studies have documented differences in dermatological findings in neonates of various racial groups. For example, the incidence of dermal melanosis is more common in black, native American, Asian and Hispanic populations.⁷ Another study showed a higher prevalence of birth marks in the Jewish than in the Arab Israeli population.⁸ The aim of our study was thus to determine the prevalence of different cutaneous lesions in newborns and evaluates the association between age, gender, maturity, route of

delivery, birth weight, maternal diseases, and different skin lesions.

PATIENTS AND METHOD

This descriptive prospective cohort study was carried out on 177 neonates who were admitted postnatal ward on district headquarter hospital, keim the period from April 2013 to March 2014. All patients were examined within the first 7 days of birth. 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. Laboratory investigations in the form of complete blood count, C-reactive protein, and blood culture were conducted. The data recorded were age, gender, and maturity, mode of delivery, birth weight, maternal diseases, clinical diagnosis, and dermatological diagnosis. We excluded preterm neonates <27 weeks, neonates with the birth injury (wounds or ecchymosis), patients with jaundice, central cyanosis, or pallor. The parents of patients signed written consents for the contribution of their children in the current study

Statistical analysis: All data were analyzed using SPSS. Statistical analysis was performed using the *t*-test or Mann-Whitney test, corrected χ^2 -test or Fischer's exact test and Spearman correlation, when appropriate. The results are expressed as counts and percentages for qualitative variables and as medians and ranges for discrete variables. A $P < 0.05$ was considered to be statistically significant.

RESULT

During the study period, 177 patients were evaluated consecutively. Of the 117 patients studied, 98 (55.4%) were male and 79 (44.6%) were female. Skin disorders were found in 132 (74.6%) out of 177 patients, whereas 45 (25.4%) of cases were free of any skin disorder. Table 1 shows that benign transient lesions of newborn were the most common category of neonatal skin disorders that were diagnosed in 54 (41%) of 132 patients, followed in frequency by birth marks that were diagnosed in 45 (34%) of all cases. Napkin dermatitis was considered the third common category of neonatal skin disorders 20 (15.2%) of all cases. Genodermatoses were only diagnosed in 4 (3%) of all cases.

Table 1: Incidence of different types of skin lesions

Neonatal Skin Disorder	N=132	%
Physiological lessons	99	75
Benign transient lesions of new born	54	41
Transient vascular phenomena	8	6.1
Acrocyanosis	4	3
Cutis Marmorata	4	3
Benign pustular dermatoses	6	4.5
Rythema toxicum neonatorum	6	4.5
Populopustular dermatoses	40	30.3
Sebaceous gland hyperplasia	4	3
Milairia	19	14.4
Milia	7	5.3
Neonatal acne	10	7.6
Birth Marks	45	34
Pigmentary birth marks	35	26.5
Mongolion spot	27	20.5
Congenital nevus	8	6
Vascular birth marks	10	7.6
Salmon Patch	5	3.8
Haemangioma	5	3.8
Pathological lesions	33	25
Napkin dermatitis and related disorder	20	15.2
Napkin dermatitis(contact dermatitis)	4	3
Seborrheric dermatitis	10	7.6
Monilial dermatitis	6	4.5
Genodermatoses	4	3
Skin tag in the hand	2	1.5
Preauricular skin tag	2	1.5
Epidermolysis bullosae	2	1.5
Cutis aplasia congenita	3	2.3
Hlstrocytosis	2	1.5
Suckling blustera	2	1.5

Relation of gestational age, gender, birth weight, maternal disease, and route of delivery to skin lesions was illustrated in Table 2. A statistically significant difference was found in relation to gestational age and birth weight, with higher prevalence of skin lesion in term neonates (≥ 37 weeks) with average for gestational age than preterm neonates (< 37 weeks) with small for gestational age (56.8% vs. 43.2%, and 60.6% vs. 39.4%, respectively) ($P < 0.05$).

Table 2: Relation of gestational age, gender, birth weight, maternal disease, and mode of delivery to presence or absence of skin lesions

	With Skin Lesion N=132 N %		Without Skin Lesion N=45 N %		X ²	P
Gestational Age						
< 37 weeks	57	43.2	33	73.3	12.25	<0.001*
≥ 37 weeks	75	56.8	12	26.7		
Gender						
Male	68	51.5	30	66.7	3.12	0.07
Female	64	48.5	15	33.3		
Birth Right						
SGA	52	39.4	7	15.6	8.25	<0.003*
AGA	80	60.6	38	84.4		
Maternal Disease						
Healthy Mother	76	57.6	24	53.3	0.25	0.62
Diseased Mother	56	42.4	21	46.7		
Route of Delivery						
C.S	57	43.2	26	57.7	0.04	8.8
NVD	75	56.8	19	42.2		

SGA-Small for generational age, AGA- Average for general age, NVD- Normal vaginal delivery, C.S- Cesarean section, *- Significant

However, no statistically significant difference was found in relation to gender, maternal disease, and mode of delivery ($P > 0.05$) [Table 3].

Table 3: Multiple logistic regression analysis study the joint effect of the risk factors (gestation age, gender, and birth weight) on the outcome (with skin lesion)

	Regression Coefficient	SE	OR	95% CI	P
Gestational age	+0.403	0.136	1.502	0.97-1.691	0.015*
Constant	-5.201	-	-	-	-

Overall model fit: Chi-square at 1 degree of freedom=6.349, $P=0.010^*$, variable were removed from the model; gender, birth weight and weight, the model correctly classified 92.3% of cases, SE- Standard error.
OR- Odds ratio, CI- Confidence interval

DISCUSSION

Skin rashes are common in neonates and can cause parental anxiety. Many of these are transient and physiological, but some may require additional work up to rule out a more serious disorder.⁹ Several studies about the prevalence of neonatal dermatoses have been documented in various countries and different racial groups. Skin disorders were detected in 240 neonates (40.0%) in Sohag University Hospital Nursery, the frequency of cutaneous lesions in German neonates was 59.7% and in Indian neonates was 94.8%^{10,11,12}. In this study, different cutaneous lesions were seen in 74.6% of newborns. This may be attributed to inherent individual differences. In that study, benign transient skin lesions of newborn were the most common category of neonatal cutaneous disorders that were seen in 41% of all cases;

papulopustular dermatoses were the commonest transient lesions that were found in 30.3% of cases, with the following dermatoses mentioned in descending manner; miliaria, neonatal acne, milia and sebaceous gland hyperplasia. Miliaria was detected in 14.4% of the studied neonates. However, Sachdeva *et al.*¹² reported that miliaria rubra was observed in (20.6%). The difference in frequencies can be explained by differences of racial characteristics and should be attributed more to the difference in climate of the places where the studies were conducted. Milia was observed in 5.3% of our studied neonates, In similarity with other studies whose reported incidence was 2.6-7.3%.^{10,11,12} In our study, birthmarks were the second common category (34% of all cases). Pigmentary birth marks constitute the majority of birthmarks (26.5% of all cases). Mongolian spots were

the most common finding in the studied neonates (20.5% of cases). In Iranian neonates, pigmentary birthmarks were the most frequent skin manifestation with a frequency of mongolian blue spots of 71.3%.¹³ Furthermore, mongolian spot was the most frequent birthmark found among Thai neonates.¹⁴ Our study showed congenital melanocytic nevi occur in 6% of all cases in similarity to findings of Chaithirayanon and Chunharas¹⁴ who reported that congenital melanotic nevi occur in 2.4% of all cases. Vascular birth marks were seen in 7.6% of all cases. Salmon patches were the most common lesion that was observed in 3.8% of the studied cases. The findings were similar to that reported with El-Moneim and El-Dawela.¹⁰ However, Ferahbas, *etal*.¹⁵ reported that salmon patches were observed in 19.2%. Vascular birthmarks such as nevus flammeus and hemangiomas were the most common birthmarks in German neonates with a frequency of 37.2%.¹¹ In Arab and Jewish infants of Asian or African ancestry, melanocytic brown lesions (monglion spots and congenital nevi were found only in Jewish infants of European ancestry.⁸ our results showed that the prevalence of birthmarks in Indian neonates is similar to the prevalence reported in nonwhite infants (Arabs, Asians, and Africans). In our study, napkin dermatitis and its related disorders were considered the third common category of neonatal skin diseases (15.2% of cases); this was in agreement with Javad¹⁶ in a Pakistan study, however, Ferahbas *etal*¹⁵ reported incidence of 2%. This difference may be due to financial reasons; mothers of studied newborns do not change nappies as frequently as required leading to prolong stool contact resulting in napkin rash. Napkin dermatitis gave a significant relation with seasons (more in summer and spring) and also with prematurity as they considered risk factors. Fungal infections were observed in 4.5% of all cases; Oral candidiasis was seen in 4 of the studied neonates (3% of all cases), it was combined with monilial dermatitis; in similarity with previous studies^{15,16,12} in which reported incidence was between 2% and 7%, respectively. Our results were similar to findings of Ferahbas *et al*.¹⁵ who showed a significant association between candidiasis and maturity (more in preterm) and also was common in winter and autumn that were considered as a predisposing factor to such condition. In our study, epidermolysis bullosae was seen in 1.5% of cases, this was similar to the results reported with El-Moneim and El-Dawela¹⁰ nearly close to (2%). In our study, it was found in full term male baby. Developmental skin defects were seen in our study including; Congenital cutis aplasi (2.3%) and accessory tags (skin tags) with a frequency of (1.5%), in similarity with the findings reported with El-Moneim and El-Dawela (3.5%)¹⁰ In our study, there were two cases of

suckling blisters (1.5%) compared with 10% reported with Ferahbas, *etal*¹⁵ this difference is mainly due to socioeconomic and environmental factors. In our study, histocytosis X syndrome was seen in 1.5% of cases. It involved two female full term babies, the diagnosis was confirmed by skin biopsy. The differences in frequency of these neonatal disorders may be due to the difference in racial, environmental (as weather difference) and socioeconomic status of the families.

CONCLUSION

Skin lesions are very common in the neonatal period. The most common skin lesions in this sample of Indian neonates differ from that of other studies, with high prevalence of benign transient lesions, birth marks, and napkin dermatitis. Most of the skin lesions in this sample are innocent and transient, but pathological lesions are not uncommon, especially in our setting where living conditions are not very hygienic. Hence, any cutaneous lesion should be differentiated from more serious skin conditions in order to avoid unnecessary therapy to neonates and to reassure parents about the good prognosis of these skin manifestations. Differentiation of the physiologic skin lesions from the pathologic ones is mandatory. 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. More studies with a larger number of neonates including of healthy ones are needed.

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