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Original Research Article

Clinical study of neonatal skin lesions

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ABSTRACT

Background: A thorough knowledge of the skin changes, physiological as well as acquired, in neonates is of prime importance for the dermatologist as well as paediatrician.
Methods: A total of 430 randomly selected live-born neonates delivered and admitted to the postpartum ward or to the Neonatal Intensive Care Unit and neonates attending the Dermatology Outpatient Department of a tertiary care institute were included in this study after taking written informed consent. A detailed assessment of history was performed and a detailed dermatological examination of each neonate was carried out. Laboratory procedures were performed to confirm diagnosis if required. Data was analyzed using SPSS ver. 20.
Results: Most common physiological skin change observed was Mongolian spot (65.35%) followed by Erythema Toxicum Neonatorum (51.63%), Epstein's pearls (46.97%) and Sebaceous gland hyperplasia (45.81%). Lanugo hair was seen in 16.74% neonates. Among congenital skin lesions, Salmon patch was seen in 15.58% of the neonates whereas congenital melanocytic nevi are seen in 4.19% of the neonates. Diaper dermatitis was the most common acquired skin manifestation seen in 5.81% of cases.
Conclusions: Neonates are prone to suffer from a wide range of dermatological problems, physiological as well as pathological. These manifestations are unique to the neonates. A detailed history and awareness of the clinical presentation facilitates the confirmation of the diagnosis.

Keywords: Neonate, Physiological, Acquired, Congenital

INTRODUCTION

Neonatal dermatology, by definition, encompasses the spectrum of cutaneous disorders that arise during the first 4 weeks of life. Many such conditions are transient, appearing in the first few days of life, only to disappear shortly thereafter.[1] The neonatal period is one of rapid adaptation in which the skin plays an important role and fully assumes for the first time its function as a barrier and of thermoregulation.[2] But the majority of the neonatal cutaneous lesions are usually physiological, transient and self-limited and thus require no therapy.[3] It is necessary to differentiate between benign and clinically significant skin lesions in neonates.

Neonatal dermatoses can be classified as follows:[4]

1) Transient skin disorders.
2) Congenital disorders - birthmarks and genodermatoses.
3) Acquired skin disorders specific to the neonatal period.
4) Iatrogenic dermatologic complications.

The available literature on neonatal skin lesions in our country is meagre. There are very few reports in the Indian literature regarding the cutaneous lesions seen in the neonates. Therefore, the present study was undertaken

to review the pattern of neonatal dermatoses in this part of the country.

METHODS

This is a hospital-based observational study which was conducted in the dermatology outpatient department of A.J. Institute of Medical Sciences, Mangalore, Karnataka.

A total of 430 randomly selected live-born neonates delivered and admitted to the postpartum ward, neonates admitted to the Neonatal Intensive Care Unit and neonates attending the dermatology outpatient department of a tertiary care institute were included in this study. Written informed consent was obtained from the parents or guardians of the neonates included in the study. After taking relevant maternal as well as neonatal history, the entire skin surface of the neonate, including the scalp, mucous membranes, genitalia, hair and nails were examined in proper ambient temperature and adequate light. Proper hand washing and sterilisation procedure were done before examination of neonate.

Photographic records were maintained. Simple investigations such as examination of scrapings for Gram staining, KOH smear and Tzanck smear were performed whenever required.

Statistical analysis

Results were tabulated and analyzed using SPSS ver. 20.

RESULTS

Of the 430 neonates included in our study, 230 (53.49%) neonates were males and 200 (46.51%) were females. 80.23% (345) of the neonates weighed more than 2.5 kgs, 69 neonates (16.05%) weighed between 2 to 2.5 kgs whereas 16 neonates (3.72%) weighed less than 2 kgs at birth.

Table 1: Correlation of various neonatal and maternal demographical factors.

	Term		Preterm		Post-term		Total
	M	F	M	F	M	F	
NVD	119	124	11	7	1	1	263 (61.16%)
LSCS	92	63	6	3	1	2	167 (38.84%)
Total	211	187	17	10	2	3	430
	398 (92.56%)		27 (6.28%)		5 (1.16%)		

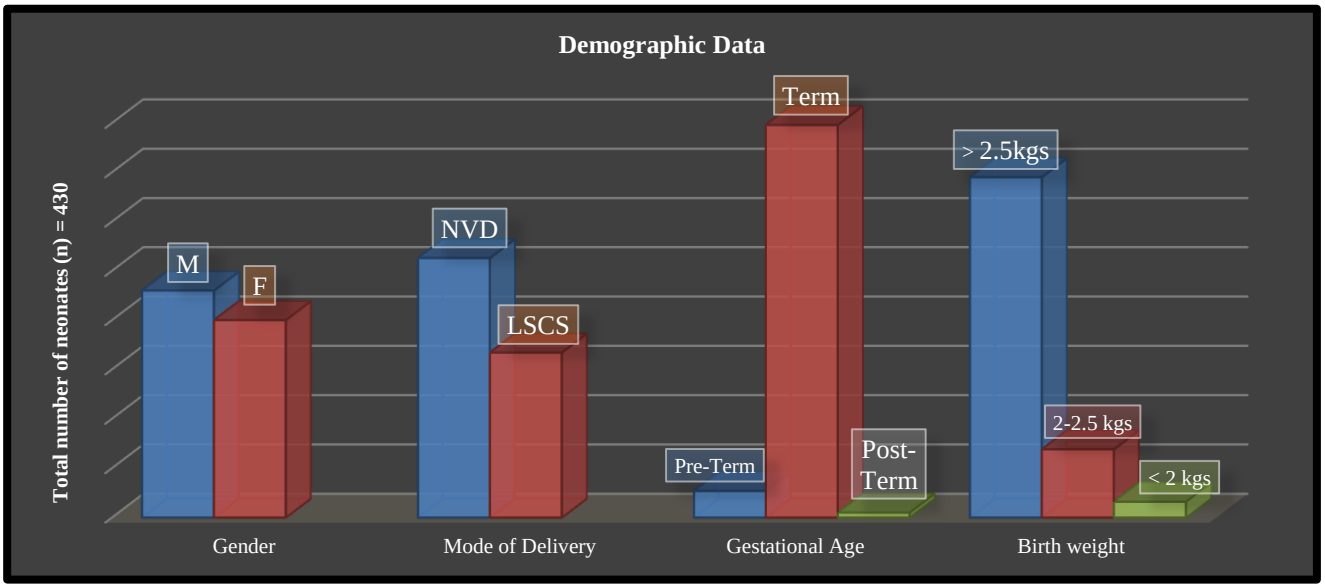

Figure 1: Demographic data correlating maternal and neonatal factors.

The co-relation of various neonatal and maternal factors is mentioned in (Table 1) and represented graphically as well (Figure 1).

A total of 1871 skin manifestations were recorded in our study. Out of the 430 neonates included in the study, 93.49% of the neonates presented with more than one cutaneous lesion. When the skin manifestations observed in the neonates were analyzed, it was found that the physiological skin disorders that did not require treatment were found to be the most common. There were no iatrogenic skin manifestations observed in our study.

Among these transient disorders the most common skin manifestation was mongolian spot (65.35%) with the lumbosacral area being the most common site of location,

followed by Erythema Toxicum Neonatorum (51.63%), Epstein's pearls (46.97%) and Sebaceous gland hyperplasia (45.81%).

Lanugo hair was seen in 16.74% children.

Salmon patch was seen in 15.58% of the neonates and 4.19% of the neonates presented with congenital melanocytic nevi.

Diaper dermatitis was observed in 5.81% of cases.

The incidence of cutaneous lesions as observed in this study is shown in (Table 2).

Table 2: Incidence of observed skin lesions among neonates.

Neonatal skin lesions	Number	Percentage (%)
1) Physiological changes		
Vernix caseosa	23	5.35
Sebaceous gland hyperplasia	197	45.81
Milia	128	29.77
Epstein's Pearls	202	46.97
Cutis Marmorata	48	11.16
Mongolian spot	281	65.35
Physiological scaling	172	40
Genital hyperpigmentation	87	20.23
Lanugo hair	72	16.74
Erythema Toxicum Neonatorum	222	51.63
Miliaria	164	38.14
Cradle cap	61	14.19
Miniature puberty	72	16.74
Transient Neonatal Pustulosis	3	0.69
2) Congenital lesions		
Congenital Melanocytic Nevi	18	4.19
Developmental Anomalies	2	0.46
Salmon patch	67	15.58
Portwine stain	8	1.86
3) Acquired changes		
Diaper dermatitis	25	5.81
Irritant contact dermatitis	8	1.86
Bullous Impetigo	11	2.56

DISCUSSION

The appreciation of normal phenomena and their differentiation from the more significant cutaneous disorders of the neonate is critical. When the cutaneous lesions observed in the neonates were analyzed, it was found that the transient skin disorders that required no treatment were found to be the most common.

mongolian spot (MS), Erythema Toxicum Neonatorum (ETN), sebaceous gland hyperplasia (SGH) and epstein pearls (EP) are the skin lesions which were commonly observed in this study. The prevalence of skin lesions is comparable to that of the previous study results except Erythema Toxicum Neonatorum which has shown the highest prevalence (51.63%) in the present study.[1,3,5,6]

Figure 2: Erythema toxicum neonatorum on the back of the neonate.

Erythema toxicum neonatorum (Figure 2) is an idiopathic, common condition seen in up to 75% of term neonates and in our study was seen in 78.89% of the full-term neonates presenting within 48 to 72 hours of life.[7] It is seen in Caucasians (37.8%) more commonly than coloured population.[8] According to a recent study conducted in Jordan, Erythema Toxicum Neonatorum showed the highest prevalence rate of 68% in black-skinned population, suggestive of factors other than race.[9] Erythema Toxicum Neonatorum has to be distinguished from other infective and noninfective pustular disorders in neonates.[10]

Figure 3: Mongolian spot.

Mongolian spot has been shown to be a good example of interracial difference. The prevalence of Mongolian spot has been as high as 80 to 90% in Asians, and it has been as low as 3 to 10% in Caucasians.[11-14] In Indians, the prevalence varies from 72 to 89%.[3,5,11,15] In the present study, 65.35% of neonates had this birthmark, (Figure 3)

similar to that of the study conducted by Jain et al.[1] Significantly higher frequency was noted in term babies and babies weighing >2.5 kg in our study which is comparable with those of other Indian workers.[3,5] There was no relation to maternal illness or mode of delivery.

Epstein pearls were observed in 202 (46.97%) neonates. The most common site being midline of palate. They occur commonly in 64–89% of normal neonates and are common in Caucasian infants. A similar prevalence rate has been noted in other studies.[5,6]

In our study, Sebaceous gland hyperplasia was seen in 197 neonates (45.81%), most commonly in the term neonates. Sebum secretion rates are high in neonates compared with preadolescent children. It is assumed that this sebaceous gland activity reflects the stimulation by placentally transferred maternal androgen, particularly by dehydroepiandrosterone.[16]

We also observed that 128 neonates (29.77%) had Milia which is comparable to another Indian study that showed a similar finding of 27%.[1] Sachdeva et al have mentioned that in their study a higher incidence of milia in term babies and those babies weighing more than 2500 gm which is similar to our finding too, however, statistical significance was not established.[3]

Figure 4: Miliaria.

Miliaria was also one of the common physiological manifestations observed in 164 neonates (38.14%) (Figure 4) similar to the study of Agarwal et al in North India that showed Miliaria in 40% of the neonates.[17]

Physiological scaling is one of the most common findings. It was seen in 172 (40%) neonates in our study, compared to a study by Nobby et al where the frequency of occurrence was 72.4%, whereas Sachdeva et al report a similar finding.[2,3] We also observed that Physiological scaling was significantly higher among neonates delivered by caesarean sections which was previously reported by Zagne et al.[18]

Vernix caseosa was seen in 5.35% of neonates. It was seen most commonly on 1st day of life.

Figure 5: Transient neonatal pustulosis.

Transient neonatal pustulosis is a self-limited, benign dermatosis of the neonates and occurs in approximately 0.2% – 4% of all term neonates. Lesions may be present in utero and are almost always present at birth. It is characterized by neutrophil containing pustules or vesicles without surrounding erythema.[7] There were 3 cases of this dermatoses observed in the present study (Figure 5).

Amongst the vascular birthmarks, the Salmon patch was commonly seen (15.58%) in our study. The prevalence of salmon patch varies from 12% to 32% in various other Indian studies.[2,3,17,19,20]

Figure 6: Congenital melanocytic nevi on the neck of the neonate.

The surveys of congenital melanocytic nevi in neonates showed a prevalence of 0.4 to 15.6%, with the highest percentage among non-whitish babies.[8] Congenital melanocytic nevi were seen in 18 (4.19%) neonates (Figure 6). The size of the nevi is important; nevi larger than 20mm are considered to be giant type and are one of the precursors of melanoma.[21] One of the neonates had a giant type of congenital melanocytic nevi on the back (Figure 7).

2 neonates showed developmental anomalies. One of the neonates had sacral dimple whereas the other neonates had a preauricular tag (Figure 8).

Figure 7: Giant type of congenital melanocytic nevi.

Figure 8: Preauricular tag.

Diaper Dermatitis is a generic term applied to rashes by various skin disorders and/or irritants (usually feces) in the diaper area with secondary bacterial or fungal infection.[22] 25 neonates (5.81%) had diaper dermatitis in our study.

Bullous impetigo is more common in neonates because of their decreased ability to achieve renal clearance of exfoliative toxin A/B produced by coagulase positive *Staphylococcus aureus* and lack of specific immunity.[22] Our study revealed 2.56% of the neonates suffering from this disorder.

CONCLUSION

Skin lesions are very common in neonatal period. Majority of the skin lesions in this period are innocent and transient but pathological lesions are also quite common especially in our settings where hygienic conditions are not very healthy. So any cutaneous lesion during this period should be carefully examined and should be differentiated from more serious skin conditions in order to avoid unnecessary therapy to neonates. It is essential that we are aware of the fact that most of the skin lesions in the neonates are transient and require no therapy. The parents can be reassured about the good prognosis of these skin manifestations.

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