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Original Research Article

A clinical study of cutaneous manifestations in neonates at a tertiary health care center

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ABSTRACT

Background: Cutaneous alterations are commonly seen in neonates as a normal process of adaptation to the external air environment after birth. It is good to know about transient skin lesions in infants to distinguish them from other conditions that prevent unwanted neonate therapy. Parents should be confident of the excellent prognosis of these manifestations of the skin. The aim of the study was to determine the patterns of cutaneous manifestations occurring among the newborn.
Methods: This prospective study was conducted in the newborn with at-least one cutaneous manifestation. A detailed history of the neonates and mother was collected using pre-designed proforma.
Results: Of 100 neonates, 52 were males, 48 were females, of these, 85 were born at term, 10 were preterm, and 5 were post-term. Mongolian spot was seen in lumbosacral, buttocks and extremities in 80 (80%) neonates, vernix caseosa in 20 (20%) neonates. Milia in 14 (14%) neonates, eczematous eruption in 30 (12.5%).
Conclusions: This neonatal skin research has provided details on normal variants occurs during the neonatal phase. It is necessary to know that most newborn skin lesions are temporary and do not require any treatment.

Keywords: Neonates, Cutaneous, Physiological, Pathological

INTRODUCTION

First 4 weeks of extrauterine life is regarded as neonatal period.[1] The gradation from a watery atmosphere to a dried one constitute a significant challenge to the skin of a new-born. Cutaneous manifestations are commonly seen in neonates after birth as a normal process of modification to the external air environment.

The neonatal skin varies from that of the adult in many ways both structurally and functionally, in that it is thinner, has less elastic skin, delicate intercellular attachments, higher permeability of the stratum corneum and produces less sweat and sebaceous gland secretions.

Various symptoms, ranging from physiological mongolian spot and transient lesion (Erythema toxicum neonatorum) to gross pathological Neonatal lupus erythematosus, are seen in neonatal skin. Most neonatal skin lesions are physiological and do not need any therapy.[2]

However, they not only cause anxiety to parents, but also to doctors who are not aware of these skin changes in the newborn. Pigmented lesions at birth, such as mongolian spots, are benign and disappear after a few years. Congenital melanocytic nevi, on the other hand, are clinically significant due to potential risk malignant melanoma.[3]

It is therefore important to be aware of transient skin lesions in newborns and to distinguish them from other ailments that prevent excessive care of neonates.[4] However, there are few studies of neonatal dermatosis in India.

Aim

The aim of the study was to determine the patterns of cutaneous manifestations occurring among the newborn.

METHODS

A prospective observational study was conducted in department of dermatology at Meenakshi Medical college with ethical clearance from the university for a period of 6 months.

The newborn babies up to 28 days referred to the outpatient department (from neonatal intensive care unit, postnatal care unit and paediatric outpatient department) were included.

Inclusion criteria includes babies in neonatal age group (up to 28 days) and having any skin lesion or manifestation and parents ready to give inform consent. Exclusion criteria includes babies more than 28 days of age, and parents refused consent. After taking the consent from the parents, took a detailed history regarding the mother's age, parity, history of maternal illness and intake of medication during pregnancy.

A total of 100 newborns up to 28 days were examined thoroughly in natural light and pattern of cutaneous lesions and findings recorded. History was taken regarding the duration, onset and progression of the lesion, regarding the immunization schedule and any other therapy given to the neonate.

General examination of the neonate was performed from head to toe which includes the length, head and chest circumference, icterus, clubbing, respiratory rate and temperature of the neonate. All the neonates were clinically examined thoroughly for cutaneous lesions. The site and the distribution of the lesions, whether localized or generalized, was noted. Babies were examined for the involvement of skin including scalp, mucosae, palms, soles, genitals, nails and hair.

A thorough systemic examination was done for every neonate. The investigations like skin biopsy, smear from the vesicle, pus for culture and sensitivity, KOH mount for fungal scraping were done when needed. The data calculated and analysed.

RESULTS

In this study 100 neonates were included, 52% of neonates were male, 48% were females. Of these 85% of them were born in the term, 10% were born in preterm and 5% were born in post-term. 54% of neonates were weighing less than 2.5 kg. Mother of 88 neonates (88%) was in the age group 20-30 years, 59% neonates were delivered by normal vaginal route. (Table 1). Mongolian spot was seen in lumbosacral, buttocks and extremities in 80 (80%) neonates. Vernix caseosa was seen in 20 (20%) neonates. Milia was seen in over the nose followed by forehead in 14 (14%) neonates (Table 2).

Miliaria crystalline was in 22 (22%) neonates, over the trunk, face and extremities. Miliaria pustulosa was seen in 10 (10%) neonates over the trunk (Table 3). The eczematous eruption was seen in 30 (30%), Napkin dermatitis was seen in 26 (26%), cradle cap was seen in 4 (4%) neonates (Table 4).

Haemangioma was seen in 4 (4%), salmon patch 1 (1%), pigmentary birthmarks like café-au-lait macules 1 (1%), congenital melanocytic nevi 2 (2%) of which one is a giant type and sebaceous nevi in 1 (1%) (Table 5).

Other neonatal dermatoses seen were candidal intertrigo in 2 (2%), collodion baby 2 (2%), epidermolysis bullosa simplex 1 (1%) cleft lip 1 (1%), lamellar ichthyosis 1(1%), staphylococcal scalded skin syndrome 1 (1%), oral thrush 1 (1%), neonatal acne 1 (1%) (Table 6).

Figure 1: Erythema toxicum neonatorum with mongolian spot.

Figure 2: Gaint Congenital melanocytic nevi.

Figure 3: Collodion baby.

Figure 4: Vernix caseosa.

Table 1: Distribution of study parameters.

Study parameters		Frequency	Percentage (%)
Gender	Male	52	52.0
	Female	48	48.0
Term of delivery	Pre-term	10	10.0
	Term	85	85.0
	Post-term	5	5.0
Weight (kg)	<2.50	54	54.0
	>2.50	46	46.0
Consanguinity	Present	42	42.0
	Absent	58	58.0
Delivery method	Normal	59	59.0
	Caesarean	41	41.0
Age of mother (years)	<20	10	10.0
	20-30	88	88.0
	>30	2	2.0

Table 2: Distribution of physiological skin lesions.

Physiological skin lesion	Term of delivery			Percentage (%)
	Pre-term	Term	Post-term	
Mongolian spot	6	74	0	80.0
Milia	3	10	1	14.0
Vernix caseosa	8	12	0	20.0
Physiological scaling	2	6	0	8.0
Epstein pearls	1	1	0	2.0
Hypertrichosis	1	1	0	2.0
Vaginal discharge	0	2	0	2.0
Knuckle pigmentation	2	9	0	11.0
Genital pigmentation	0	2	0	2.0
Physiological jaundice	0	3	0	3.0
Cutis marmorata	0	1	0	1.0
Harlequin color	1	0	0	1.0

Table 3: Distribution of noninfective skin lesions.

Non-infective skin lesion	Gender		Term of delivery			Percentage (%)
	Male	Female	Pre-term	Term	Post-term	
Miliaria crystalline	13	9	2	20	0	22.0
Miliaria pustulosa	6	4	2	8	0	10.0

Continued.

Non-infective skin lesion	Gender		Term of delivery			Percentage (%)
	Male	Female	Pre-term	Term	Post-term	
Miliaria rubra	5	3	0	8	0	8.0
Erythema toxicum	5	0	2	3	0	5.0

Table 4: Distribution of eczematouseruptions.

Eczematouseruptions	Gender		Term of delivery			Percentage (%)
	Male	Female	Pre-term	Term	Post-term	
Napkin dermatitis	20	6	3	23	0	26.0
Cradle cap	2	2	1	3	0	4.0

Table 5: Distribution of vascular birthmarks.

Vascular birthmarks	Gender		Term of delivery			Percentage (%)
	Male	Female	Pre-term	Term	Post-term	
Haemangioma	3	1	0	4	0	4.0
Salmon patch	0	1	0	1	0	1.0
Café au lait macules	1	0	0	1	0	1.0
Congential melanocytic nevi	2	0	0	2	0	2.0
Sebaceous nevi	1	0	0	1	0	1.0

Table 6: Distribution of other skin lesions.

Skin lesions	No. of. neonates
Candidal intertrigo	2
Collodion baby	2
Epidermolysis bullosa simplex	1
Cleft lip	1
Lamellar ichthyosis	1
SSSS	1
Oral thrush	1
Neonatal acne	1

DISCUSSION

It is necessary to understand normal phenomena and differentiate them from major neonate skin disorders. Multiple studies in various ethnic groups have documented the prevalence of dermatosis among infants. The prevalence of skin lesions is comparable to that of the previous studies that found a high prevalence (38 percent), except napkin dermatitis.[1,5,6,7] The mongolian spot is an excellent illustration of an interracial disparity. The prevalence of mongolian spots was as high as 80 to 90% in Asians and was as low as 3 to 10% in Caucasians.[6,8] In Indians, the prevalence ranged from 72 to 89%.[9-12] In this study, 80% of newborns had mongolian spot, similar to that of the study performed by Dash et al.[9]

Miliaria has been observed in 40 (40%) newborns in our sample. The incidence ranged from 4.4% to 50% in other studies.[13,14] It is believed that the presence of hypertonic sodium chloride in the skin may be a factor in the aetiology of naturally occurring miliaria and may be a manifestation of poor climate tolerance in this geographic area. There were no preterm neonates in our sample. This may be due to the immaturity of the reaction of the skin to external influences. The most common dermatologic disorder of infancy is irritant diaper dermatitis.[15] This condition is not found for the first three weeks after childhood. The disease typically begins at weeks 3 to 12. It is characterised by joined patches of erythema and scaling on the convex surfaces, with the skinfolds spared. It consists of erythema, light maceration and edema in the early stages; the development of lesions increases maceration. In the advanced stage, erosion and ulceration may develop.[16] Knuckle pigmentation (11%) was found most commonly in epidermal pigment changes. It has been postulated to respond to the complete circulation of maternal and placental hormones. Oestrogen and progesterone have been found to have a melanocytic stimulating effect in these hormones.

Physiological scaling was seen in 8 (8%) of neonates in present study relative to relative to the Australian neonate study, where the incidence rate was 65%, for 6 (6%) full-term and 2 (2%) pre-term neonates.[5] Pre-term infants showed desquamation in this study relative to other studies.[1,9] where desquamation was not seen in pre-term neonates. The difference in prevalence is primarily attributed to the fact that the period of observation in our sample was less than 4 weeks, the time when the pre-term neonate permeability barrier is undergoing maturation.

Whereas, in other studies, the period of evaluation was within 48 hours. Birth and pre-term infants do not exhibit desquamation until 2-3 weeks of life. Post-maturity in the neonate contributes to increased desquamation, which is more widespread. It appears to be perfect, diffuse scaling and peeling. Vernix caseosa was seen in 20 (20%) of neonates. It was most often seen on the first day of life. Post-term neonates are free of vernix caseosa.

Erythema toxicum neonatorum was seen in 5% of neonates, comparable to the recent study in India.[10,12,17] It was seen within 48 hours of life, most often in full-term neonates. The prevalence differs between various ethnic groups.[1,5,6,18,19] It is most frequently seen in the caucasian population (37.8%) compared to the colored population.[7] However, in a recent study in Jordan, erythema toxicum neonatorum showed a higher prevalence rate of 68% in the black-skinned population, which may indicate reasons other than racial factors.[20] Erythema toxicum neonatorum must be differentiated from other infectious and non-infective pustular disorders in neonates.[21] Haemangioma was the most common vascular birthmark seen (4%) followed by a salmon patch (1%). The overall risk of melanoma in the congenital nevus is proportional to the extent of the lesion, with the increased risk to the congenital nevi giant. The likelihood of survival in giant congenital nevi is around 5%; most cases, younger than the age of 18. Melanomas are likely to be deep-seated nodular lesions in the dermis, subcutis, or depth in more extensive and medium-sized congenital nevi.[22,23]

CONCLUSION

Mongolian spot, napkin dermatitis and miliaria crystalline were the most common physiological, eczematous, and transient skin lesions seen in the study. The neonatal skin results give details on normal variants.

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