Clinical study of cutaneous manifestations in neonates

Likhita Punuru[1], Purnachandra Badabagni[2,*], Subbarao Dasika[3], Ramachandra Bendapudi V[4]

[2]Associate Professor, MNR Medical College & Hospital, Hyderabad, [3]Professor, [4]Professor & HOD, Alluri Sitaramaraju Academy of Medical Sciences, Andhra Pradesh

***Corresponding Author:**
Email: sunpurna123@gmail.com

Abstract

The neonatal period constitute the initial 4 weeks of extra-uterine life. A host of clinical manifestations occur in neonates varying from physiological to grossly pathological, hence it is necessary to differentiate between benign and clinically significant skin lesions among the newborn. It is important to be aware of the transient skin lesions in newborn and differentiate them from other serious conditions which will avoid unnecessary therapy to the neonates and the parents can be assured of good prognosis of these skin manifestations.

Aims: 1) To study the various patterns of cutaneous manifestations occurring among the newborn. 2) To estimate the prevalence of physiological and pathological skin lesions among the new born.

Materials and Methods: An Institutional based, prospective study was conducted in the department of Dermatology, Venereology and Leprosy, Eluru, West Godavari district, A.P. 100 neonates born in the Department of Obstetrics and Gynecology of the same institution and having at-least one cutaneous manifestation were considered in this study. The study was conducted between the period of November 2011 to May 2013.

Results: Of 100 neonates, 54 were males, 46 were females, of these, 89 were born at term, 9 were preterm, and 2 were post term. Of the cutaneous lesions in the newborn, physiological skin lesions were more common among all accounting for 57.0%, followed by eczematous eruptions 18.2%, transient non infective conditions 10.2%, birthmarks 9.1% and others 5.5% in decreasing order of frequency.

Conclusion: This study of newborn skin provides information about normal variants occurring in neonatal period. It is important to be aware of the fact that most of the skin lesions in the newborn are transient and require no therapy.

Keywords: Cutaneous lesions in neonate, Skin Marker, Transient eruptions, Pathological eruptions.

Access this article online

Website:
www.innovativepublication.com

DOI:
10.5958/2455-6769.2016.00006.5

Introduction

The neonatal period constitute the first 4 weeks of extra-uterine life. The skin of the neonate differs from that of the adult in several ways. The thickness of newborn skin is 40% to 60% to that of adult skin. It has weaker intercellular attachments and produces lesser amount of sweat. A host of manifestations varying from physiological Mongolian spot and transient eruption (Erythema toxicum neonatorum) to grossly pathological Neonatal lupus erythematosus are seen in the skin of neonates. Majority of them, the neonatal cutaneous lesions are physiological and requires no therapy[(1)]. However, these not only cause concern to the parents, but also to the physicians who are unfamiliar to these skin changes in newborn. It is necessary to differentiate between benign and clinically significant skin lesions in newborn.

Pigmented lesions at birth, such as Mongolian spots are benign and they always disappear by few years, whereas congenital melanocytic nevi are clinically significant because of future risk of malignant melanoma[(2)]. Therefore it is important to be aware of the transient skin lesions in newborn and differentiate these from other serious conditions which will avoid unnecessary therapy to the neonates and the parents can be assured of good prognosis of these skin manifestations[(3)]. The neonatal skin changes also show a wide range of geographic and ethnic variation. Some of them are common in darker skin races and vice versa. It is important to know the pattern of dermatoses prevalent among Indian children in the neonatal period. However, studies on neonatal dermatoses conducted in India are limited. Hence, this present study was planned to know the prevalence of different cutaneous lesions among newborns in Eluru, West Godavari district, AP.

Materials and Methods

A Hospital based, cross sectional, prospective study was conducted with ethical clearance from the institution. After taking the consent from the parents, a detailed history was taken regarding the age of the mother, parity, history of maternal illness and drug intake during pregnancy. Mode of the delivery and history of any consanguinity was noted. A total of 100 newborn were examined thoroughly in day light and morphology of skin lesions and findings were recorded. The sex, birth weight, age at the time of examination and birth order were also noted in each case. History

was taken regarding the duration, onset and progression of the lesion, regarding the immunization schedule and any other treatment 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. Cutaneous examination of the neonate for any lesions was done. Site and the distribution of the lesions whether localized or generalized was noted. Eyes were examined which includes sclera, upper and lower palpebral conjunctiva. Oral mucosa was examined which includes buccal mucosa, tongue, lips and palate. Nasal and Genital mucosa were examined for any lesions. Hair was examined for its colour, texture and density. Nails were examined for brittleness and discoloration. A thorough systemic examination was done for every neonate.

Results

Of 100 neonates, 54 (54%) were males, 46 (46%) were females, of these, 89(89%) were born at term, 9 (9%) were preterm, 2 (2%) were postterm. Fifty eight (58%) neonates weighted < 2.50 kg, 42 (42%) weighted >2.50 kg, history of consanguinity was present in 44(44%), absent in 56 (56%).Sixty nine (69%) neonates were delivered by normal vaginal route, 31(31%) by caesarean section. The maximum number of mothers 84(84%) were in the age group 20-30 yrs., 13(13%) were of <20 yrs. age, 3(3%) were in age group > 30 yrs.

Of the cutaneous lesions in the newborn, physiological skin lesions were more common among all accounting for 143 (57.0%), followed by eczematous eruptions 50 (18.2%), transient non infective conditions 28 (10.2%) birthmarks 9 (9.1%) and others 15 (5.5%) in decreasing order of frequency.

Most of the neonates have more than one physiological skin lesion among which Mongolian spot was most commonly seen in 84 (84%) neonates, out of which 38 (38%) were females and 46 (46%) were males. The most common site of location was lumbosacral area followed by other areas like buttocks and extremities. Milia were seen in 18 (18%) neonates, out of which 11 (11%) were males and 7 (7%) were females most commonly over the nose followed by forehead.

With respect to maturity, skin lesions were commonly seen in term newborns, compared to pre-term and post term newborns. Vernix caseosa was seen in 4 (4%) full term and 3 (3%) preterm neonates. Physiological scaling was seen in 8 (8%) full term and 2 (2%) preterm neonates. Milia were seen in 16 (16%) full term, 1 (1%) preterm and 1 (1%) post term neonates. Epstein pearls were seen in 1 (1%) full term neonates. Hypertrichosis was seen in 3 (3%) full term and 1 (1%) post term neonates. Vaginal discharge was seen in 2 (2%) full term neonates. Knuckle pigmentation was seen in 9 (9%) full term and 1 (1%) pre term neonates. Mongolian spot was seen in 78 (78%) full term and 6 (6%) pre term neonates. Physiological jaundice was seen in 3 (3%) full term neonates. Cutis marmorata was seen in 3 (3%) full term and 1 (1%) pre term neonate.

Miliaria crystallina was the common transient non-infective condition seen in 16 (16%) neonates, which is commonly seen over the trunk followed by extremities and face. Miliaria rubra was seen in 8 (8%) neonates over the trunk. Erythema toxicum neonatorum was seen in 2 (2%) neonates. Miliaria putulosa was seen in 2 (2%) neonates. Miliaria crystallina was seen in 11 (11%) males, 5 (5%) females. It was seen in 13 (13%) full-term neonates, 3 (3%) preterm neonates. Miliaria rubra was seen in 5 (5%) males, 3 (3%) females. It was seen in 8 (8%) full term neonates. Erythema toxicum neonatorum was seen in 2 (2%) males. It was seen in 2 (2%) full term neonates. Miliaria pustulosa was seen in 2 (2%) males. It was seen in 2 (2%) full term neonates.

Eczematous eruption was seen in 50 (50%) neonates out of which 32 (32%) were males and 18 (18%) females, among which there were 46 (46%) full term, 4 (4%) pre term neonates. Napkin dermatitis was seen in 38 (38%) neonates out of which 24 (24%) were males and 14 (14%) females, among which there were 36 (36%) full term and 2 (2%) pre term neonates. Cradle cap was seen in 12 (12%) neonates out of which 8 (8%) were males and 4 (4%) females, among which there were 10 (10%) full term and 2 (2%) pre term neonates.

Vascular birthmarks - Haemangioma was seen in 7 (7%) neonates, of which 4 (4%) were males and 3 (3%) were females, all of whom were full term neonates. Pigmentary birthmarks like congenital melanocytic nevi were seen in 1 (1%) neonates seen in a male baby and sebaceous nevi in 1 (1%) seen in a male baby.

Other neonatal dermatoses seen were neonatal acne in 6 (6%), colloidion baby 1 (1%), epidermolysis bullosa simplex 1 (1%), addisonian pigmentation 1 (1%) and staphylococcal scalded skin syndrome 1 (1%).

Frequency of Skin Lesions in Newborns

Skin Lesions	No.	Percentage (%)
1. **Physiological Skin Lesions**		
• Vernix caseosa	7	7
• Physiological Scaling	10	10
• Milia	18	18
• Epstein pearls	1	1
• Hypertrichosis – presence of excessive lanugo hair	4	4
• Miniature puberty		
– Vaginal Discharge	2	2
• Pigmentary changes: melanin		
a. **Epidermal**		
– Knuckle pigmentation	10	10

b.	**Dermal**		
–	Mongolian spot	84	84
•	Pigmentary changes: non-melanin		
–	Physiological jaundice	3	3
•	Color changes resulting from vascular abnormalities		
–	Cutis marmorata	4	4
2.	**Transient Non infective Conditions**		
–	Erythema toxicum neonatorum	2	2
–	Miliaria crystalline	16	16
–	Miliaria rubra	8	8
–	Miliaria pustulosa	2	2
3.	**Eczematous Eruptions**		
–	Napkin dermatitis	38	38
–	Cradle cap	12	12
4.	**Birth Marks**		
•	Vascular		
–	Haemangioma	7	7
•	Pigmentary		
–	Congenital melanocytic nevi	1	1
–	Sebaceous nevi	1	1
5.	**Others**		
•	Addisonian pigmentation	1	1
•	Congenital vitiligo	1	1
•	Epidermolysis bullosa simplex	1	1
•	Colloidion baby	1	1
•	Neonatal acne	6	6
•	Lamellar ichthyosis	1	1
•	Candidial intertrigo	1	1
•	Oral thrush	1	1
•	SSSS	1	1

Of the cutaneous lesions in the newborn, physiological skin lesions were more common among all accounting for 57.0%, followed by eczematous eruptions 18.2%, transient non infective conditions 10.2%, birthmarks 9.1% and others 5.5% in decreasing order of frequency.

Discussion

The appreciation of normal phenomena and their differentiation from the more significant cutaneous disorders of the neonate is critical. The prevalence of dermatoses among newborns has been documented in various studies conducted in different racial groups.

Mongolian spot, Napkin dermatitis and Milia are the skin lesions which were commonly seen in this study. The prevalence of skin lesions is comparable to that of the previous study results.[5,8,9,13] except napkin dermatitis which has shown high prevalence (38%) in the present study.

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, and it has been as low as 3 to 10% in Caucasians.[8,14] In Indians the prevalence varies from 72-89%.[4,10,11,12] In present study, 84% newborns had this birthmark, similar to that of the study conducted by Dash et al.[4]

Napkin dermatitis was seen in 38 (38%) neonates, with commonest site of location being perineal region and buttocks. They occur in 4 to 35% of neonates and the incidence triples in babies with diarrhoea. The main cause of napkin dermatitis is wearing a dirty nappy for too long. Prolonged dampness, friction and ammonia substances released from urine can irritate the skin of neonates. Soaps and detergents left on cloth nappies after washing can also contribute to napkin dermatitis. In perineal region and buttocks the skin might be raised or swollen with erythematous papules and at times pustules. The rash can cause discomfort and pain, which can make the neonate irritable. Secondary infection is considered as the main complication of napkin dermatitis.

Physiological scaling was seen in 10 (10%) neonates in the present study, compared to a study of Australian neonates, where the frequency of occurrence was 65%,[5] it was seen in 8 (8%) full-term neonates and 2 (2%) preterm neonates. Preterm infants showed desquamation in present study, compared to other studies[4,13] where desquamation was not seen in preterm neonates. The variation in prevalence is mainly because the duration of observation in our study was less than 4 weeks, the time when permeability barrier of preterm neonate undergoes maturation. Whereas, in other studies the duration of observation was within 48 hrs. Of birth and premature infants do not show desquamation until 2-3 weeks of life. Post maturity in the neonate leads to increased desquamation, which is more generalised. It appears as fine, diffuse scaling and peeling. Vernix caseosa was seen in 7 (7%) of neonates. It was seen most commonly on 1st day of life. Post term neonates are devoid of vernix caseosa.

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.[9] An interesting study which adopted a comparative approach between Arabs and Jews, in Israel conducted by Kahana et al,[15] found that Arabs had more number of melanocytic brown lesions (Mongolian spots, congenital melanocytic nevi, café au lait macules) than jews coming from European ancestry, but jews coming from Asia and African descent had almost equal frequency of these melanocytic brown lesions as in Arabs. Congenital melanocytic nevi were seen in 1 (1%) neonate. The size of the nevi is important, nevi larger than 20 cm are considered to be giant type, which is a precursor of melanoma.[15] Neonates with giant

congenital melanocytic nevi have a 5% lifetime risk of malignant transformation.

References

1. Chang MW, Orlow SJ. Neonatal dermatology. In : Freedberg IM, Eisent AZ, Wolff K, Austen KF, Goldsmith LA, Katz SI, editors. Fitzpatrick's dermatology in general medicine. 6th Ed. New York: Mc Graw – Hill; 2003.p. 1366-86.
2. Dohil MA, Bauh WP, Vascular and pigmented birthmarks. Peadiatr Clin N Am 2000;47:783-810.
3. Darmstadt GL, Dinulous JG, Neonatal skin care. Pediatr Clin North Am 2000;47(4):757-82.
4. Dash K, Grover S. Radhakrishna S, Vani M Clinicoepidemiological study of cutaneous manifestations in the neonate, In J Dermatology Venereal Leprol 2000;66-26-28.
5. Rivers JK, Frederickson PC, Dibdin C. A prevalence survey of dermatoses in the Australian neonate. J Am Acad Dermatol 1990;23(1):77-81.
6. Shajari H, Shajari A, Sajadian N, Habiby M. The incidence of birthmarks in Iranian neonates. Acta Medica Iranica 2007;45(5):424-426.
7. Hidano A, Purwoko R, Jitsukawa K. Statistical survey of skin changes in Japanese neonates. Pediatr Dermatol 1986;3:140-144.
8. Ferahbas A, Utas S, Akcakus M, Gunes T, Mistik S. Prevalence of cutaneous findings of hospitalized neonates: a prospective observational study. Pediatr Dermatol 2009;26:139-142.
9. Pruksachatkunakorn C, Duarte AM, Schachner LA. Skin lesions in newborns. Int Pediatr 1999;14(1):28-31.
10. Kulkarni ML, Singh R. Normal variants of skin in neonates. Indian J Dermatol Venereol Leprol 1996;62:83-86.
11. Meenakshi S, Surjeet K, Madhu N. Dewan SP. Cutaneous lesions in newborn. Indian J Dermatol Venereol Leprol 2002;68:334-337.
12. Nanda A, Kaur S, Bhakoo ON, Dhall K. Survey of cutaneous lesions in Indian newborns. Pediatr Dermatol 1989;6:30-42.
13. Moosavi Z, Hosseini T. One year survey of cutaneous lesions in 1000 consecutive Iranian newborns. Pediatr Dermatol 2006;23:61-63.
14. Shih IH, Lin JY, Chen CH. Hong HC. A birthmark survey in 500 newborns: clinical observation in two Northern Taiwan medical centre nurseries. Chang Gung Med J 2007;30:220-5.
15. Kahana M, Feldman M, Abudi Z, Yurman S. The incidence of birthmarks in Israeli neonates. Int J Dermatol 1995;34:704-6.