

Original Research

Cutaneous Lesions In Neonates: A Clinical Investigation Conducted At A Tertiary Health Care Center

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ABSTRACT

AIM: To investigate the clinical pattern of diverse dermatoses in neonates at a tertiary medical facility.

MATERIALS AND METHODS: Our institute conducted this descriptive, cross-sectional, observational study, which included a thorough dermatological examination of each neonate, with each finding documented and analyzed statistically.

RESULTS: Of the 200 participants evaluated, 110 (55%) were males and 90 (45%) were females. Of all the babies examined, 115 (57.5%) were term babies, 77 (38.5%) were preterm, and 8 (4%) were postterm.

CONCLUSION: The investigation of neonatal dermatoses is important to all dermatologists in order to distinguish between physiological and pathological conditions, thereby preventing the need for superfluous treatment of neonates in situations where none is necessary and assisting in the reduction of parents' unnecessary anxiety.

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INTRODUCTION

The neonatal phase comprises the first four weeks of existence outside of the uterus.¹ In contrast to adult skin, neonatal skin is characterized by its relatively low hairy appearance (40–60%), weakened dermoepidermal attachment, and diminished capacity to eliminate and detoxify substances that are applied to it. In contrast to the composition of adult skin, which accounts for 3% of the overall bodily weight, neonatal skin comprises 13%. Furthermore, the body surface area-to-weight ratio of a neonate is three to five times that of a typical adult. Premature neonates have a significantly thinner stratum corneum and produce very little lipid due to the embryonic function of the sebaceous glands and epidermis.² In comparison to adults, the rate of disease evolution in neonates is extremely rapid. Consequently, circumstances that seem severe at first glance transpire to be inconsequential, while in other cases the opposite

holds true.³ Mechanical protection, thermoregulation, immunosurveillance, and the maintenance of a barrier to prevent unavoidable fluid loss are all processes dependent on the epidermis of the newborn. Additionally, it facilitates the transition from the aqueous environment within the uterus to the terrestrial environment outside the uterus. Neonatal dermatology, as the term implies, encompasses the extensive array of cutaneous disorders that become apparent within the initial fortnight following birth.⁴ In numerous studies published around the globe, dermatoses are documented in 96% to 99.3% of all neonates, which is a high incidence rate.^{5,6} A majority of cutaneous lesions in infants are transient, self-limiting, and benign in nature.⁴

Subtypes of neonatal dermatoses include the following:⁷

1. Temporary cutaneous disorder

2. Hereditary and congenital dermatological condition.
3. Dermatopathies acquired
4. Dermatopathology in development
5. Skin complications caused by trauma or iatrogenic factors.

Numerous pathological and physiological conditions are unique to the epidermis of neonates. Hence, it is critical for all dermatologists to possess an indispensable understanding of neonatal skin biology, as numerous dermatoses that may appear severe may, in fact, be transient or physiological processes enduring rapid involution.⁸ Therefore, this approach would be beneficial in reducing unwarranted stress among the parents and preventing superfluous costs associated with treatments that are not essential. By analyzing their various patterns, the primary intention and objective of this study was to identify neonatal dermatoses and estimate the prevalence of physiologic and pathologic lesions in neonates.

MATERIAL AND METHODS

This descriptive, cross-sectional, observational study was conducted at our institution with Institutional Ethics Committee approval. A cohort of 200 cases was examined during the specified time period subsequent to their recruitment from the outpatient department of dermatology.

Inclusion Criteria

1. Babies in neonatal age group (up to 28 days) and having any skin lesion or manifestation.
2. Parents ready to give inform consent.

Exclusion Criteria

1. Babies more than 28 days of age.
2. Parents refused consent.

A comprehensive history was obtained, including the age of the mother, any consanguinity history, the method of delivery and any maternal illnesses that occurred during her pregnancy. Subsequently, in direct sunlight, each participant underwent a comprehensive examination to precisely define the morphology of skin lesions; this information was duly recorded. In addition to these variables, age, sex, and birth weight were also recorded during the examination. The diagnosis was consistently established exclusively on the basis of the clinical impression. Due to the qualitative nature of all variables in our study, their values were expressed as percentages.

RESULTS

A total of 200 individuals were assessed, of which 110 (55%) were male and 90 (45%) were female. 115 (57.5%) of the infants that were examined were classified as term, 77 (38.5%) as preterm, and 8 (4%) as postterm. The frequency of skin lesions seen in our participants has been depicted lucidly in Table 3.

Table 1: Distribution of the patients as per the gender

Gender	No.	Percentage
Male	110	55%
female	90	45%

Majority of the patients were Male i.e. 55%, Female were 45%

Table 2: Distribution of the patients as per the age of gestation

Age of gestation	No.	Percentage
Preterm	77	38.5%
Term	115	57.5%
postterm	8	4%

The majority of the patients were term 57.5% followed by preterm 38.5% and Post term 4%.

Table 3: Frequency of skin lesions in neonate in our study

Skin lesions	n(%)
Physiological skin lesions	
Vernixcaseosa	9(4.5)
Physiological scaling	12(6)
Sebaceous gland hyperplasia	14(7)
Milia	14(7)
Epstein pearls	4(2)
Hypertrichosis	9(4.5)
Suckling pads	4(2)
Occipital alopecia	1(0.5)
Miniature puberty	

Hypertrophy of clitoris	1(0.5)
Hypertrophy of mammary gland	1(0.5)
Vaginal discharge	3(1.5)
Pigmentary changes due to melanin	
Epidermal	
Genital pigmentation	1(0.5)
Axillary pigmentation	1(0.5)
Dermal	
Mongolian spot	21(10.5)
Color changes from vascular abnormalities	
Acrocyanosis	1(0.5)
Harlequin color change	2(1)
Cutis marmorata	6(3)
Transient non-infective conditions	
Erythema toxicum neonatorum	19(9.5)
Transient pustular melanosis	15(7.5)
Miliariacrytallina	1(0.5)
Miliariarubra	4(3)
Infantile acropustulosis	1(0.5)
Eczematous eruptions	
Napkin dermatitis	2(1)
Perianal dermatitis	2(2)
Infantile seborrheic dermatitis	9(4.5)
Infections	
Bullous impetigo	3(1.5)
Candidiasis	9(4.5)
Birth marks	
Vascular	
Salmon patch	8(4)
Port wine stain	2(1)
Pigmentary	
Congenital melanocytic nevi	3(1.5)
Epidermal	
Naevus sebaceous of Jadassohn	2(1)
Developmental defects	
Aplasia cutis congenita	12(6)
Umbilical hernia and granuloma	2(1)
Cleft lip and cleft palate	2(1)

Of all the cutaneous lesions in the newborn, physiological skin lesions were most common, seen in 104 (52%) neonates. This was followed by transient non-infectious conditions in 40(20%) neonates, birth marks in 15(7.5%), developmental defects in 16 (8%), eczematous eruptions in 13(6.5%) and infections in 12(6%) neonates.

Mongolian spots (MSs) exhibited the highest prevalence among the physiological skin lesions examined in our study, at 10.5%. Sebaceous gland hyperplasia and milia, on the other hand, each demonstrated a prevalence of 7%.

Aside from a solitary discovery of MS in premature infants, none of the remaining entities were identified. In contrast, the percentage of full-term and preterm

infants exhibiting these alterations was 21.1% and 25.3%, respectively. The most frequently observed physiologic skin alterations in full-term neonates were vernixcaseosa, hypertrichosis, and MS, each accounting for 5.3% of the total. Sebaceous gland hyperplasia and milia followed closely at 4.6% and 4.2%, respectively. Conversely, among preterm infants, sebaceous gland hyperplasia (2.2%) was the most frequently observed condition, followed by physiological scaling in the neonate (4.7%) and milia (4.2%).

DISCUSSION

The majority of cutaneous lesions in newborns are physiologic or transient in nature, manifesting within the initial four weeks of life. Numerous investigations

have been conducted to examine neonatal dermatoses. Our research distinguished itself from prior investigations by conducting a comprehensive examination of numerous dermatoses that were entirely absent from those studies. In our investigation, the most prevalent entity detected was the Mongolian Spot. MS is classified as ceruloderma and is characterized by an indistinct region of blue-black to grey pigmentation. Although inherently a physiological condition, it might exhibit a correlation with congenital metabolic errors.⁹ MS begins to diminish progressively after one year, and by six years, it is nearly unrecognizable.¹⁰ Multiple sclerosis is observed in 75% to 7% of the population across diverse ethnic groupings. Similarly, the incidence rate of 10.5% in our study fell within the range that was previously delineated. However, in comparison to other research conducted by Baruah CM et al¹¹ and Dash K et al¹² on neonates, the proportion was considerably lower. At a rate of 7%, sebaceous gland hyperplasia ranked as the second most prevalent condition in our research. Sebaceous gland hyperplasia is a physiological phenomenon that occurs in newborns as a result of maternal androgens. Multiple uniform, pin-point yellowish papules appear on the cheekbones, nose, forehead, and upper lips. The prevalence of sebaceous gland hyperplasia varied between 21.4% and 62% in other research, according to Dash K et al¹¹, Gokdemir G et al¹³, and Jain N et al.¹⁴ Milia are follicular epidermal cysts that manifest as plural globular papules measuring 1–3 mm in diameter on the face. Our participants exhibited a comparable incidence to sebaceous gland hyperplasia. Once more, these results were significantly diminished when compared to prior investigations conducted by Baruah CM et al¹¹ and Dash K et al¹² regarding its incidence, with the exception of the study conducted by Jawade et al¹⁵, which reported a 9.92% incidence. A neonate experiences physiologic desquamation, which is a superficial desquamation of the skin. Its prevalence has been documented in prior research to vary between 7.2% and 83%.^{11,12} The value of 6% that our study documented was significantly lower in comparison to that of other studies. Our results regarding miniature puberty were virtually identical to those of Nobby B et al¹⁶. In contrast, the incidence documented by Jain et al¹⁴ was significantly greater than that of any prior research conducted by Gokdemir G et al¹³ or Sachdeva M et al¹⁷ on the subject. ETN is a prevalent benign vesicular postnatal eruption that affects fifty percent of full-term infants. The incidence of ETN in our study was 9.5%, which is comparable to the results reported by Gokdemir et al¹³ and Jawade et al¹⁵. However, in other research, the incidence varied between 21% and 38%. Miliaria, which is a prevalent disorder observed in 15% of neonates, is caused by the occlusion of sweat ducts. The Miliaria values observed in our investigation

were significantly lower in comparison to those assessed by other researchers. Napkin-area inflammatory dermatoses comprise ND. In this regard, the incidence of ND in our study was comparatively lower at 1% in comparison to the investigations conducted by Jain et al¹⁴, Sadana et al¹⁸, and Jawade et al¹⁵. Our study observed an incidence rate of 4.5% for SD, which is marginally lower than the result reported by Jawade et al¹⁵ and unquestionably considerably lower than the conclusion deduced by Jain et al¹⁴. Among the infections that were detected in our participants, impetigo and candidiasis were the only two. Impetigo incidence was found to be intermediate in comparison to findings reported in previous studies conducted by Baruah et al¹¹ and Jawade et al.¹⁵ In contrast, the incidence of candidiasis of the skin was significantly higher in our study values comparable to those of Jawade et al¹⁵ and considerably greater than those of Dash et al¹², Sadana et al¹⁸, Jain et al¹⁴, and Baruah et al.¹¹

CONCLUSION

The patterns of presentation of neonatal dermatoses ought to be known by all dermatologists. The authors of our study posit that the elevated prevalence of developmental defects may be attributed to a confluence of genetic and environmental factors, with industrialization and urbanization also playing a role.

REFERENCES

1. Pujitha BB, Joweriya R, Ramadevi B, Babu TN, Ramadas K. Spectrum of cutaneous manifestations in neonates at a tertiary care center. *Our Dermatol Online*. 2023;14(2):150-55.
2. Oranges T, Dini V, Romanelli M. Skin physiology of the neonate and infant: Clinical implications. *Adv Wound Care (New Rochelle)*. 2015;4:587-95.
3. Dhahu S, Khade A. Clinical Spectrum of Cutaneous Manifestations in Neonates: An Observational Study. *Annals of International Medical and Dental Research*, 2018;4(6):1-7.
4. Roy J, Rakesh N, Das K, Kurien AJ. A Clinical Study of Iatrogenic Cutaneous Manifestations in Neonates in Intensive Care Unit in a Tertiary Care Hospital. *International Journal of Pharmaceutical and Clinical Research* 2022;14(12); 647-56.
5. Choudhary P, Mehta RD, Ghiya BC, Sharma D. A clinical study of physiological cutaneous manifestations in early neonates at a tertiary care center in Western Rajasthan. *Indian J Paediatr Dermatol* 2022;23:43-8.
6. Moosavi Z, Hosseini T. One-year survey of cutaneous lesions in 1000 consecutive Iranian newborns. *Pediatr Dermatol* 2006;23:61-3.
7. Parikh DA. Neonatal skin disorders. In: Valia RG, Valia AR, editors. *IADVL textbook of dermatology*. 3rd ed. Mumbai: Bhalani Publishing House. 2001; 1:160–70.
8. Gudurpeni S, Bubna AK, Rangarajan S, Veerarahavan M, Krishnamoorthy M, Rajesh G. A clinical study of cutaneous lesions in neonates at a tertiary health care

- center in Chennai Indian J Paediatr Dermatol 2017;18:18-23.
9. Gupta D, Thappa DM. Mongolian spots. Indian J Dermatol Venereol Leprol 2013;79:469-78.
 10. Leung AK. Mongolian spots in Chinese children. Int J Dermatol 1988;27:106-8.
 11. Baruah CM, Bhat V, Bhargava R, Garg RB. Prevalence of dermatoses in the neonates in Pondicherry. Indian J Dermatol Venereol Leprol 1991;57:25-8.
 12. Dash K, Grover S, Radhakrishnan S, Vani M. Clinicoepidemiological study of cutaneous manifestations in the neonate. Indian J Dermatol Venereol Leprol 2000;66:26-8.
 13. Gokdemir G, Erdogan HK, Köslü A, Baksu B. Cutaneous lesions in Turkish neonates born in a teaching hospital. Indian J Dermatol Venereol Leprol 2009;75:638.
 14. Jain N, Rathore BS, Krishna A. Dermatoses in Indian neonates: A clinical study. Egypt J Dermatol Venereol 2014;34:86-92.
 15. Jawade SA, Chugh VS, Gohil SK, Mistry AS, Umrigar DD. A clinico-etiological study of dermatoses in pediatric age group in tertiary health care center in South Gujarat region. Indian J Dermatol 2015;60:635.
 16. Nobby B, Chakraborty N. Cutaneous manifestations in the new born. Indian J Dermatol Venereol Leprol 1992;58:69-72.
 17. Sachdeva M, Kaur S, Nagpal M, Dewan SP. Cutaneous lesions in new born. Indian J Dermatol Venereol Leprol 2002;68:334-7.
 18. Sadana DJ, Sharma YK, Chaudhari ND, Dash K, Rizvi A, Jethani S. A clinical and statistical survey of cutaneous changes in the first 120 hours of life. Indian J Dermatol 2014;59:552-7.