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CLINICAL SPECTRUM OF NEONATAL DERMATOSES :A STUDY AT A TERTIARY CARE CENTRE IN SOUTH INDIA

Dermatology

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ABSTRACT

Background: Dermatoses are commonly seen in neontes. Screening of skin lesions is important to distinguish benign conditions from those requiring clinical attention. **Aim and objective:** To study the incidence and clinical pattern of dermatoses among the neonates and evaluate the association with gender, maturity and birth weight. **Methods:** An observational study was done among newborn in a tertiary care hospital. A total of 100 newborns (≤4 weeks) were screened for cutaneous lesion. Incidence of dermatosis were expressed in proportion while Chi- square test (p value<0.05) was used to identify its association with gender, maturity and birth weight. **Results:** The study found 99% neonates with at least one skin lesion. Most common pattern of dermatosis was physiological (91.4%) followed by acquired (5.7%), iatrogenic (1.7%) and congenital (1.1%). Physiological desquamation was significantly more present among female neonates. Sebaceous hyperplasia, Mongolian spot and hypertrichosis lanuginose were more common among neontes with low birth weight ,while Erythema Toxic Neonatorum and Vernix Caseosa among babies with birth weight ≥ 2.5 kg. Hypertrichosis lanuginose was significantly common in preterm neonates. **Conclusion:** Physiological skin chnges are very common and needs to be distinguished from pathological conditions to avoid unnecessary consultation and treatment.

KEYWORDS

Neonatal Dermtoses, Physiological skin changes, Physiological desquamation, Erythema toxicum neonatorum

INTRODUCTION-

Neonatal dermatology deals with the spectrum of physiological and/ or pathological cutaneous changes that occur during the first four weeks of extrauterine life.

The immature skin of newborn has to endure several changes from intrauterine aqueous environvinment to comparatively dry extrauterine environment.

Furthermore, preterm neonates with impaired barrier function, are more prone to thermal instability, infections and percutaneous toxicity.[1]Dermatoses in neonates may be physiological skin changes, congenital disorders, acquired skin disorders and iatrogenic skin injuries.[2]

Understanding dermatoses in neonates is essential for appropriate management and care of skin of neonates

METHODOLOGY

A hospital based cross sectional study was conducted over a period of 6 months from July 2019 to December 2019, where one hundred neonates either delivered at our institute or admitted in Neonatal Intensive care unit or attending dermatology out patient department were included in the study. Neonates with structural anomalies and ambigueous genitalia were excluded .

After taking informed consent from the parents or guardians of the neonates, a detailed cutaneous examination was done and details were entered in a predesigned proforma. The relationship between various maternal and neonatal factors were analyzed. Simple bedside investigations like Gram stain, KOH preparation and Tzank smear were performed wherever necessary.

Statistical Analysis

Data entry was done in MS Excel software and analysis in SPSS Version 21.The prevalence of various dermatosis is expressed in percentage while the average number of dermatosis in mean ± standard deviation. The association of common dermatosis with gender, birth weight and maturity were done using Chi-square test with p value <0.05 considering to be statistically significant.

RESULTS

Of the 100 neonates examined, 44 were female and 56 male. Among these, 99 had at least one dermatoses. A total 175 dermatoses were documented in the present study with the average number of dermatoses seen in being 1.78 ± 0.54. Single and two different dermatoses were seen in 40% each and 18% with three different dermatoses. The most common pattern of dermatoses seen was physiological (91.4%) followed by acquired (5.7%), iatrogenic (1.7%) and congenital (1.1%). The sub-types of these patterns is given in table 1.

Table 1: Clinical pattern of dermatosis seen among study group (N=100)

Types of Dermatoses	Frequency	Percentage
Physiological (91.4%)		
Physiological Desquamation	28	28
Sebaceous Hyperplasia	26	26
Mongolian Spot	24	24
Erythema Toxic Neonatorum	19	19
Miliaria	13	13
Vernix Caseosa	9	9
Milia	9	9
Hypertrichosis Lanuginosa	7	7
Physiological Jaundice	7	7
Vaginal discharge	5	5
Genital Hyperpigmentation	4	4
Cutis Marmorata	3	3
Salmon patch	3	3
Cradle cap	2	2
Suckling blister	1	1
Congenital (1.1%)		
Congenital Melanocytic Nevus	1	1
CALM	1	1
Acquired (5.7%)		
Candidial intertrigo	5	5
Diaper Dermatitis	2	2
SSSS	1	1

Impetigo	1	1
Omphalitis	1	1
Iatrogenic (1.7%)		
Adhesive Plaster Injury	3	3

CALM- Café au lait macules, SSSS-Staphylococcus scarled skin syndrome

Among the physiological dermatoses, commonly documented were physiological desquamation (28%), sebaceous hyperplasia (26%), mongolian spot (24%), erythema toxic neonatorum (19%) and miliria (13%). The other dermatoses were seen among less than 10% of neonates. Majority of the neonates weighed more than 2.5kg (63%) at birth and were term babies (84%). Skin lesions with a prevalence of seven and more were checked for association with gender, birth weight and maturity. Physiological desquamation was significantly associated with female neonates than male. Sebaceous hyperplasia, Mongolian spot and hypertrichosis lanuginosa were more common among neonates with low birth weight (<2.5kg) while Erythema Toxic Neonatorum and Vernix Caseosa were more among neonates with birth weight ≥ 2.5 kg. Hypertrichosis lanuginose was the only lesion to show statistically significant association with maturity. It was more prevalent among pre-term infant (33.3%) than term (2.4%) and post term (0%). (Table 2 and 3)

Table 2: Association of various dermatoses with gender and birth weight

Dermatoses	Gender			Birth weight		
	Female (n=44)	Male (n=56)	P value	<2.5 kg (n=37)	≥2.5 kg (n=63)	P value
Physiological Desquamation	17 (38.6%)	11 (19.6%)	0.04*	9 (24.3%)	19 (30.2%)	0.34
Sebaceous Hyperplasia	11 (25.0%)	15 (26.8%)	1.00	14 (37.8%)	12 (19.0%)	0.03*
Mongolian Spot	11 (25.0%)	13 (23.2%)	1.00	13 (35.1%)	11 (17.5%)	0.04*
ETN	12 (27.3%)	7 (12.5%)	0.07	3 (8.1%)	16 (25.4%)	0.02*
Miliaria	7 (15.9%)	6 (10.7%)	0.55	6 (16.2%)	7 (11.1%)	0.33
Vernix Caseosa	3 (6.8%)	6 (10.7%)	0.72	0 (0.0%)	9 (14.3%)	0.02*
Milia	3 (6.8%)	6 (10.7%)	0.72	3 (8.1%)	6 (9.5%)	1.00
HL	3 (6.8%)	4 (7.1%)	1.00	7 (18.9%)	0 (0.0%)	0.00*
Physiological Jaundice	2 (4.5%)	5 (8.9%)	0.46	3 (8.1%)	4 (6.3%)	0.70

ETN- Erythema Toxic Neonatorum, HL- Hypertrichosis Lanuginosa, *statistically significant

Table 3: Association of various dermatoses and maturity

Dermatoses	Maturity			P value
	Pre-term (n=15)	Term (n=84)	Post-term (n=1)	
Physiological Desquamation	5 (33.3%)	23 (27.4%)	0 (0.0%)	0.73
Sebaceous Hyperplasia	6 (40.0%)	20 (23.8%)	0 (0.0%)	0.35
Mongolian Spot	6 (40.0%)	18 (21.4%)	0 (0.0%)	0.25
ETN	1 (6.7%)	17 (20.2%)	1 (5.3%)	0.05
Miliaria	2 (13.3%)	11 (13.1%)	0 (0.0%)	0.92
Vernix Caseosa	0 (0.0%)	9 (10.7%)	0 (0.0%)	0.39
Milia	0 (0.0%)	9 (10.7%)	0 (0.0%)	0.39
HL	5 (33.3%)	2 (2.4%)	0 (0.0%)	0.00*
Physiological Jaundice	1 (6.7%)	6 (7.1%)	0 (0.0%)	0.96

*statistically significant

DISCUSSION

Neonatal dermatoses is a group of skin lesions diagnosed during the first 4 weeks after birth. The present study found 99% of newborns with at least one skin lesion. Studies from south India [3,4] have documented 98.5% to 100% while from north India 94.8%.[5] Studies from Egypt, [6]Europe, [7] Brazil [8] and Australia [9] reported 40%, 74.3%, 94.8% and 99.3% respectively. Physiological lesion which are transient in nature, are more commonly seen than pathological. But these are a cause of concern for parents. Thus understanding the burden of these dermatosis and factors associated will help in parent counseling and to decide the need for further management.

Physiological lesion were seen among 91.4% of newborns, followed by acquired lesions (5.7%), iatrogenic (1.75) and congenital lesion (1.1%). All studies had documented physiological dermatosis to be the most common and others causes with varying proportion. Jain et. al. [5] found acquired lesion (22%) to be more common that iatrogenic (17.5%) and congenital (5%). El-Moneim et.al. [6] study had 14.6% and 7.8% of lesion due to acquired and congenital respectively, while Sadana et.al. [10] identified only 0.3% cases to be acquired and of congenital lesion each.

In the present study, physiological desquamation was the most common lesion present in 28% of newborn. Similar finding were documented by Veersh et. al. [11] Studies by Dash et. al.[12] reported lesser prevalence of 15% while Monteagudo et.al. [13] found 41.5% newborn with physiological desquamation. These difference in proportion could be due to variation in clinical diagnosis of the condition. Its pathophysiology is unknown and it mainly affects hand, feet and ankles. If it is widespread, itchyosis vulgaris and continual peeling syndrome should be ruled out.[14] In our study this condition was more commonly seen among females (38.6%) than male (19.6%) which was significant at p value < 0.05, while Behera et. al. [15] found it more common among males (17.8%) than female (14.2%). Sadana et. al. [10] found physiological desquamation to be associated with term neonates while while Gokdemir et.al. [16] found it to be more common in post term. Our study found no association with maturity of neonates. Further research among larger sample and meta-analysis is required to confirm these contradicting findings.

Sebaceous glands are present in high concentration over the face, back, upper arm and chest. Its hyperplasia is a benign transient condition and is common among neonates. It occurs due to exposure of maternal hormones that causes increased sebaceous excretion within few hours following birth.[17] Our study identified 26% with this skin lesion similar to studies by Veersh et. al.,[11] and Dash et. al. [12] but a study by Monteagudo et. al. [13] in Spain, found 75% newborn with sebaceous hyperplasia. Shivakumar et. al. [18] in there study reported only 2.8% newborns with sebaceous hyperplasia. Low birth weight was significantly associated with sebaceous hyperplasia in our study while gender and maturity was not. But a study by Gokdemir et.al. [16] found it to be more common among female and post-term babies and Behera et.al. [15] among male and term babies.

Mongolian spot is a blue green patch seen on the sacrogluteal region. They tend to expand during first year of life and disappear in 3 to 5 years. It is hypothesized to occur due to the interruption in migration of melanocytes from neural crest through epidermis.[14] In our study found 24% with this lesion but most of the other studies [6,15,19] reported a much higher percentage ranging between 58% to 84%. We found Mongolian spot to be associated with Low birth weight babies but no such association was found by Behera et. al. [15] in their study while Haveri et. al. [19] found it more common in male babies.

Erythema Toxic Neonatorum (ETN) is characterized by small erythematous macules with or without a central papule or pustule. These lesions are present on face, trunk and extremities but spare the palms and soles. The etiology of erythema neonatorum toxicum remains unknown but possible causes could be allergic reaction, mechanical or chemical irritation, hormonal influences. ETN was present in 19% of newborn in our study. Its incidence in other studies [6,7,13,14] varies between 6 % to 27%. ETN was more common among babies with birth weight more than 2.5 kg (25.4%) than low birth weight babies (8.1%). No such association were found in other studies but was common among female. [15]

Vernix caseosa protects the skin and facilitates extra-uterine adaptation in the first postnatal week, if not washed away after birth. It

was present in 9% newborn in the present study. Similar percentage was reported by Veeresh et. al.[11] Some studies [8,13] reported a very high percentage ranging from 26% to 49.2% while Behera et. al. [15] documented only 0.5% of neonates with vernix caseosa. This wide difference could be due to the time of examination of newborn. Neonate's undergone bath following delivery would not have the biofilm on them and thus the skin lesion would not be documented. Vernix caseosa was more prevalent among babies with weight more than 2.5kg.

Lanugo hairs are fine unmedullated vellus hairs that cover the whole body of newborn. The incidence of lanugo hair in other studies [11,12,16] ranges between 7 to 14%, which was similar to our study. Hypertrichosis Lanuginosa was found to be associated with pre-term and low birth weight babies as reported in several studies.[3,16]

Physiological jaundice was seen among 7% of newborn. A study by Gorur et. al.[3] reported less than 2% cases. Behera et. al. [15] found statistical significant association of physiological jaundice with term and low birth weight babies.

Other physiological dermatosis was seen in less than 5% of case. Of these Cutis marmorata is of clinical importance and it should be distinguished from Cutis marmorata telangiectatica congenital (CMTC). Cutis marmorata is a physiological dilatation of small venules and capillaries in response to cold and disappears on warming unlike CMTC. Newborn with CMTC should be screened for associated anomalies such as disproportionate length and girth of limbs, growth and development delays, ocular abnormalities and the head circumference.[20]

Figure 1: Sebaceous hyperplasia with Hypertrichosis lanuginosa

Figure 2: Suckling blister

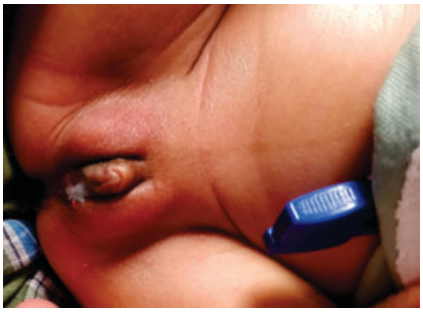

Figure 3 : Vaginal discharge

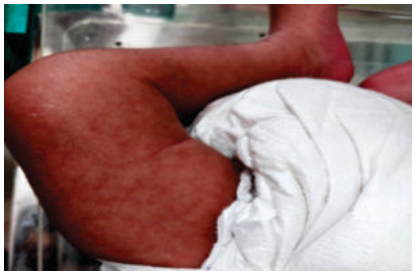

Figure 4: Cutis marmorata

Among the acquired causes Candidial intertrigo (5%) was most common followed by diaper dermatitis (2%) and single case of Staphylococcus scaled skin syndrome, impetigo and omphalitis. Similar finding were documented by Moneim et.al. [8] while Jain et. al. [5] had 5% cases of diaper dermatitis and 2.5% candidiasis. Most of the studies documented fungal infections to be more common than bacterial except for Behera et. al.[15]

Figure 5: Staphylococcal Scalded Skin Syndrome

The stratum corneum, epidermis and dermis is thinner in newborn compared to adults due to which their skin is more vulnerable to injury during routine procedure. Our study had 1.7% of dermatosis due to iatrogenic cause of which all were due to adhesive plaster. A study on iatrogenic lesion alone, by Sushmitha et. al. [21] also found needle stick injury (70.3%) to be the commonest followed by phototherapy induced rash (10.1%), bronze baby syndrome (9.3%) and injury due to adhesive tape was only 0.85%. Physician need to take due care to avoid any iatrogenic cause of injury which can pose a risk of secondary infection and distress among parents.

Our study has reported the prevalence of common skin lesion among newborn in a tertiary care hospital. There is a wide variation in the occurrence of various neonatal dermatosis but overall physiological dermatoses are more common. Adequate knowledge regarding these neonatal dermatosis will avoid unnecessary referral and management for transient lesion and aid in better parental counseling.

REFERENCES

1. Parikh D, Srinivas SM. Neonatal skin care and skin disorders. In: Sacchidanand S, Savitha A S, Shilpa K, Shashikumar BM, eds. IADVL Textbook of Dermatology. 5th ed. Bhalani ; pp 289.
2. Jain N, Bhagirath S, Rathore S, Krishna A. Dermatoses in Indian Neonates: A clinical study. Egypt J Dermatol Venereol 2014 ;34: 86-92.
3. Gorur DK, Murthy SC, Tamraparni S. Early neonatal dermatoses: A study among 1260 babies delivered at a tertiary care center in South India. Indian J Paediatr Dermatol 2016;17:190-5.
4. Baruah CM, Bhat V, Bhargava R, Garg RB. Prevalence of dermatoses in the neonates in Pondichery. Indian Journal of Dermatology, Venereology and Leprology. 1991 Jan1;57:25.
5. Jain N, Rathore BS, Krishna A. Dermatoses in Indian neonates: A clinical study. Egyptian Journal of Dermatology and Venerology. 2014 Jul 1;34(2):86.
6. Dyavannanavar V, Kumar PR, Malkud S. Clinical study of cutaneous lesions in neonates at a tertiary care centre. IP Indian J Clin Exp Dermatol 2020;6(2):187-189
7. Behera B, Kavadya Y, Mohanty P, Routray D, Ghosh S, Das L. Study of physiological and pathological skin changes in neonates: An east indian perspective. Indian J Paediatr Dermatol 2018;19:40-7.
8. El Moneim AA, El Dawela RE. Survey of skin disorders in newborns: clinical observation in an Egyptian medical centre nursery. EMHJ-Eastern Mediterranean Health Journal, 18 (1), 49-55, 2012. 2012.
9. Ábrahám R, Meszes A, Gyurkovits Z, Bakki J, Orvos H, Csoma ZR. Cutaneous lesions and disorders in healthy neonates and their relationships with maternal-neonatal factors: a cross-sectional study. World Journal of Pediatrics. 2017 Dec;13(6):571-6.
10. Krüger EM, Sinkos F, Uhry JF, Boni JC, Okamoto CT, Purin KS, Nisihara R. Dermatoses in the early neonatal period: their association with neonatal, obstetric and demographic variables. Revista Paulista de Pediatria. 2019 Jun 3;37:297-304.
11. Rivers JK, Frederiksen PC, Dibdin C. A prevalence survey of dermatoses in the Australian neonate. Journal of the American Academy of Dermatology. 1990 Jul 1;23(1):77-81.
12. 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.
13. Dash K, Grover S, Radhakrishnan S, Vani M. Clinico epidemiological study of

cutaneous manifestations in the neonate.Indian J Dermatol Venereol Leprol 2000; 66:2628.
14. Monteagudo B, Labandeira J, León-Muiños E, Carballeira I, Cabanillas M, Suárez-Amor O, et al. Frequency of birthmarks and transient skin lesions in newborns according to maternal factors (diseases, drugs, dietary supplements, and tobacco). Indian J Dermatol Venereol Leprol 2011;77:535.
15. Kutlubay Z, Tanakol A, Engýn B, Cristina ON, Sýmsek E, Serdaroglu S, Tuzun Y, Yilmaz E, Bülent ER. Newborn skin: common skin problems. Maedica. 2017 Jan;12(1):42.
16. Gokdemir G, Erdoğan HK, K˙şl, A, Baksu B. Cutaneous lesions in Turkish neonates born in a teaching hospital. Indian J Dermatol Venereol Leprol 2009;75:638.
17. Kanada KN, Merin MR, Munden A, Friedlander SF. A prospective study of cutaneous findings in newborns in the United States: correlation with race, ethnicity, and gestational status using updated classification and nomenclature. J Pediatr. 2012 Aug;161(2):240-5.
18. Shivakumar S, Manjunathswamy BS, Metgud T, Doshi B. Cutaneous manifestations in neonates: A 1-year cross-sectional study in a tertiary care hospital. Indian J Health Sci Biomed Res 2018;11:125-9.
19. Haveri FT, Inamadar AC. A cross-sectional prospective study of cutaneous lesions in newborn. International Scholarly Research Notices. 2014;2014.
20. Levy R, Lam JM. Cutis marmorata telangiectatica congenita: a mimicker of a common disorder. CMAJ. 2011 Mar 8;183(4):E249-51.
21. Sushmitha ES, Manoj D, Ravindra K, Guruprasad G. Clinico-epidemiological study of iatrogenic cutaneous manifestations in neonates in intensive care unit in a tertiary care hospital. Int J Res Dermatol 2019;5:17-22.