



Original Article

Patterns of Dermatoses among infants attending Dermatology outpatient department

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ABSTRACT

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Background: The stage of infancy lasts from birth to 12 months of age (WHO). Infantile dermatoses differ significantly from adult dermatoses in their clinical presentation and course. The objective of this study was to determine the various patterns of dermatoses among infants in North Eastern India.

Methods: A cross-sectional study was conducted at a tertiary care medical college and hospital for a period of six months. The study included a total of 300 infants. Based on the patterns of skin manifestations, the infants were categorized into two groups: neonatal (birth to 28 days) and post-neonatal (29 days to 12 months). A detailed history was obtained for each infant, followed by thorough clinical examination. Relevant investigations were carried out in clinically doubtful cases. The dermatological conditions were systematically tabulated and analyzed.

Results: In the neonatal group, physiological skin conditions were predominant (approximately 65%), whereas infectious dermatoses were more common in the post-neonatal group (around 55%). Among infectious conditions, parasitic infections (25%) were the most frequent, followed by bacterial (12%), viral (10%), and fungal infections (7%). Sweat gland disorders (14%) were the next most common group after infections and were more prevalent in older infants. Seborrheic dermatitis (10%) was the most common dermatitis and showed nearly equal prevalence in both neonatal and post-neonatal groups.

Conclusion: Infants are highly susceptible to various infectious dermatoses including bacterial, viral, fungal, and parasitic infections. Infected family members may act as a source of persistent or recurrent infections. Although physiological skin conditions are common in the neonatal period and require reassurance and parental counselling, both infectious and non-infectious dermatoses are prevalent in infancy and require appropriate diagnosis and management.

Keywords: Dermatitis, North Eastern India, Infant.

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INTRODUCTION

Infancy is defined as the period from birth upto one year of age and is broadly divided into the neonatal period (birth to 28 days) and the post-neonatal period (29 days to 12 months).¹ This is a critical phase of rapid physical growth and developmental changes. During this time, the skin undergoes structural and functional adaptation to the extrauterine

environment. Because of its immaturity, infant skin is more susceptible to infections, inflammatory conditions, and various physiological changes.

Dermatological disorders are among the most common health problems in the paediatric population worldwide, with reported incidence ranging between 9% and 37%.² A significant proportion of patients attending dermatology outpatient departments belong to the paediatric age group. It has been observed that nearly 30% of visits to paediatricians and dermatologists are related to skin disorders.³ However, most available data focus on older children, and comparatively fewer studies specifically address dermatoses in infants, particularly in Eastern India.

Infant dermatoses differ considerably from those seen in older children and adults in terms of aetiology, morphology, distribution, and prognosis.⁴ Many skin conditions in newborns are transient and physiological, such as erythema toxicum neonatorum and milia, which often cause anxiety among parents despite being benign. On the other hand, infectious dermatoses—including bacterial, viral, fungal, and parasitic infections—are common in infancy due to immature immunity, close contact with caregivers, and environmental factors. Early identification and appropriate management are essential to prevent complications and chronicity.

The pattern of dermatological diseases in infants varies according to age, climate, hygiene practices, socioeconomic status, nutritional status, and cultural practices.⁵ Eastern India, with its humid climate and diverse population, presents unique epidemiological characteristics that may influence the spectrum of infant dermatoses. Understanding the local prevalence and clinical patterns is important for accurate diagnosis, effective treatment, and proper parental counselling.

Therefore, the present cross-sectional study was conducted over a period of six months in a tertiary care hospital to evaluate the clinical pattern of dermatoses among 300 infants. The study aimed to determine the prevalence, distribution, and types of skin disorders in neonatal and post-neonatal age groups, thereby contributing to better clinical management and preventive strategies in this vulnerable population.

MATERIALS AND METHODS

A non-interventional, cross-sectional study was conducted among infants aged from birth to one year attending the Dermatology, Outpatient department of a tertiary care medical college and hospital. After fulfilling the inclusion and exclusion criteria, infants presenting with skin manifestations were screened and enrolled in the study.

Study Period

The study was carried out over a period of six months. A total of 300 infants with dermatological manifestations were included during this period.

Data Collection

The enrolled infants were divided into two groups according to age and pattern of skin manifestations:

- **Neonatal group:** Birth to 28 days
- **Post-neonatal group:** 29 days to 12 months

Data collection was done in three parts. First, a detailed history was taken including patient identification details, birth weight, history of prematurity, maternal drug intake, antenatal history, developmental history, history of similar complaints in siblings, onset and duration of disease, history of external applications, and family history of dermatoses. Socio-demographic information was also collected through direct interview of parents or caregivers.

Second, thorough clinical examination was performed in all cases, including examination of skin, mucosa, scalp, hair, nails, and oral cavity.

Third, relevant laboratory investigations such as Gram staining, KOH examination, and histopathological examination were performed in clinically doubtful cases wherever necessary.

Data were tabulated and analysed according to age, sex, etiological classification. Written informed consent was obtained from parents or guardians before inclusion in the study. Proper precautions were taken during specimen collection to minimize discomfort. In cases requiring biopsy, 1% lignocaine infiltration was used for pain control.

RESULTS

A total of 300 infants with skin diseases were included in the study during the six-month period. Among them, 75 (25%) belonged to the neonatal age group and 225 (75%) were in the post-neonatal age group.

Out of the total 300 infants, 195 (65%) were boys and 105 (35%) were girls, with a male-to-female ratio of approximately 1.8:1.

Age Distribution

- Neonatal group (<1 month): 75 cases (25%)
- Post-neonatal group (1 month–1 year): 225 cases (75%)

Etiological Distribution

In the neonatal group, physiological and transient conditions were predominant, accounting for approximately 65% of cases. Pigmentary disorders constituted around 33%, with Mongolian spots being the most common. Infectious dermatoses were less common in neonates.

In the post-neonatal group, infectious dermatoses were the most common category, accounting for approximately 55% of cases. Among infectious conditions:

- Parasitic infections were most common (about 25%)
- Bacterial infections accounted for approximately 12%
- Viral infections accounted for about 10%
- Fungal infections accounted for approximately 7%

Sweat gland disorders constituted around 14% of total cases and were more frequently observed in older infants. Dermatitis accounted for approximately 20% of total cases, with seborrheic dermatitis being the most common type and showing nearly equal prevalence in both age groups.

Pattern of Dermatoses in Neonates

Among the 75 neonates:

- Physiological conditions such as milia, erythema toxicum neonatorum, and exfoliation of skin were common.
- Mongolian spots were the most frequent pigmentary disorder.
- Infectious conditions were relatively uncommon.
- Seborrheic dermatitis and intertrigo were the common inflammatory dermatoses observed.

Overall, infectious dermatoses were the most common group in infancy, particularly in the post-neonatal period, followed by dermatitis and sweat gland disorders.

Table 1: Age and Sex Distribution of Infants (N = 300)

Age Group	Boys n (%)	Girls n (%)	Total n (%)
< 1 month (Neonatal)	54 (72%)	21 (28%)	75 (25%)
1 month – 1 year (Post-neonatal)	141 (62.7%)	84 (37.3%)	225 (75%)
Total	195 (65%)	105 (35%)	300 (100%)

Male : Female ratio = 1.8 : 1

Table 2: Comparative Analysis of Etiological Distribution in Different Age Groups (N = 300)

Etiology	<1 Month (n=75) n (%)	>1 Month (n=225) n (%)	Total (n=300) n (%)
Physiological / Miscellaneous	30 (40%)	6 (2.7%)	36 (12%)
Pigmentary disorders	25 (33.3%)	8 (3.6%)	33 (11%)
Infectious disorders	5 (6.7%)	124 (55.1%)	129 (43%)
Dermatitis	10 (13.3%)	50 (22.2%)	60 (20%)
Sweat gland disorders	5 (6.7%)	37 (16.4%)	42 (14%)
Total	75 (100%)	225 (100%)	300 (100%)

Table 3: Pattern of Dermatoses in Neonates (n = 75)

Dermatosis	Number of Cases	Percentage (%)
Physiological conditions	30	40%
Milia	8	10.7%
Erythema toxicum neonatorum	10	13.3%
Exfoliation of skin	7	9.3%
Others	5	6.7%
Pigmentary disorders	25	33.3%
Mongolian spots	20	26.7%
Other pigmentary lesions	5	6.7%
Infectious disorders	5	6.7%
Bacterial	2	2.7%

Dermatosis	Number of Cases	Percentage (%)
Fungal	1	1.3%
Parasitic	2	2.7%
Dermatitis (Seborrheic/Intertrigo)	10	13.3%
Sweat gland disorders (Miliaria)	5	6.7%

Dermatoses Encountered in Older Infants (1 Month to 1 Year)

Out of the total 300 infants included during the six-month study period, 225 (75%) belonged to the post-neonatal age group (1 month to 1 year).

Infectious dermatoses were the most common conditions observed in older infants, accounting for approximately 55% of cases in this age group. Parasitic infections (scabies) were the most frequent, followed by bacterial, viral, and fungal infections. Sweat gland disorders were also common, particularly miliaria. Dermatitis was the second most common broad category, with seborrheic dermatitis and atopic dermatitis being the predominant types.

Pigmentary disorders and allergic conditions were relatively less common in this age group compared to neonates.

Table 4: Pattern of Various Dermatoses in >1 Month Age Group (n = 225)

Dermatosis	No. of Cases	Percentage (%)
Sweat Gland Disorders		
Miliaria	37	16.4%
Pigmentary Disorders		
Congenital melanocytic nevus	2	0.9%
Haemangioma	3	1.3%
Post-inflammatory hypo/hyperpigmentation	4	1.8%
Mongolian spots	1	0.4%
Ichthyosis (Lamellar)	1	0.4%
Allergic Disorders		
Drug rash	1	0.4%
Acute urticaria	1	0.4%
Erythema multiforme	1	0.4%
Dermatitis		
Atopic dermatitis	11	4.9%
Seborrheic dermatitis	23	10.2%
Papular urticaria	10	4.4%
Eczema	2	0.9%
Contact dermatitis	3	1.3%
Pityriasis alba	2	0.9%
Infectious Disorders		
Bacterial infections	27	12.0%
Parasitic (Scabies)	57	25.3%
Fungal infections	16	7.1%
Viral infections	23	10.2%
Appendageal tumor	1	0.4%
Manifestations due to protein energy malnutrition	2	0.9%

Total = 225 (100%)



Figure 1: Hemangioma over trunk



Figure 2: Hemangioma over scalp



Figure 3: Mongolian spot



Figure 4: cradle cap



Figure 5: Giant Bathing Trunk Nevus



Figure 6: Neonatal Acne

Summary of Findings in Older Infants

The most common dermatoses in the post-neonatal group were infectious in etiology (55%), with scabies being the single most common condition (25.3%). Bacterial infections accounted for 12%, viral infections for 10.2%, and fungal infections for 7.1%.

Sweat gland disorders (16.4%) were also frequently observed, especially during warmer months. Dermatitis accounted for approximately 22% of cases, with seborrheic dermatitis being the most common type.

Scabies was seen throughout the six-month period, whereas bacterial infections and miliaria showed increased occurrence during warmer months.

DISCUSSION

There is limited data regarding infant dermatoses from Eastern India, and the present six-month cross-sectional study of 300 infants highlights important epidemiological trends. The findings are broadly comparable with previously published studies, while also demonstrating certain regional variations.

In the present study, physiological and transient neonatal dermatoses constituted approximately 65% of cases, which is consistent with the study by Samanta and Achar⁶, where physiological dermatoses accounted for 65.3% of neonatal cases. Similar findings were also reported by Nobbay and Chakrabarty (69%)⁷, Baruah et al. (93%)⁸, and Kulkarni and Singh (72%)⁹, indicating that most neonatal dermatoses are benign and self-limiting. This supports the observation that neonatal skin conditions are predominantly physiological and require reassurance rather than aggressive treatment.

With increasing age, infectious dermatoses became the most common group (43%) in the present study. This finding is comparable to studies by Awal et al. (41.1%)¹⁰, Rawat (50.29%)¹¹, and Patel et al. (38.43%)¹², all of which reported infections and infestations as the predominant dermatoses in children. Similarly, Sacchidanand et al. (32.47%)¹³ and Karthikeyan et al. (54.5%)¹⁴ also documented infections as the leading category. However, this contrasts with the findings of Vora et al.¹⁵, where non-infectious dermatoses (79.6%) predominated, likely due to better hygiene and living conditions. Among infectious conditions, scabies was the most common parasitic infestation (25.3%) in the present study. This is comparable to findings by Jawade et al. (24.49%)¹⁶ and Sharma and Mendiratta (46.44%)¹⁷, who also reported scabies as the most frequent infestation. However, the prevalence in our study was higher than that reported by Balai et al. (10.49%)¹⁸,

indicating the influence of overcrowding, hygiene, and socioeconomic factors. Similar observations were made by Samanta and Achar, where scabies was the only parasitic infestation in infants.

In the present study, bacterial infections accounted for 12% of cases, which is lower compared to studies by Sharma et al. (37.5%), Ghosh et al. (35.6%)¹⁹, and Solanki et al. (23.52%)²⁰, where bacterial infections predominated. This variation suggests a possible epidemiological shift or differences in environmental and healthcare factors.

Fungal infections (7%) in the present study were comparable to Indian studies reporting rates between 4.6% and 9.1%, such as those by Samanta and Achar. However, some studies, such as Sangameshwara and Venkatesh²¹, reported fungal infections as the most common group, highlighting the role of climatic factors like heat and humidity.

Viral infections (10%) in the present study were slightly lower than the 18.2% reported by Nanda et al. (Kuwait)²² but comparable to other Indian studies. Differences in viral prevalence may be due to geographic and environmental variation. Inflammatory dermatoses, particularly seborrheic dermatitis and atopic dermatitis, showed patterns similar to previous studies. While Samanta and Achar and other Indian studies reported seborrheic dermatitis as the most common inflammatory dermatosis, the present study observed a higher prevalence of atopic dermatitis in older infants, which aligns more closely with Western literature. This trend has been attributed to increasing urbanization, as also discussed in earlier studies.

Sweat gland disorders (14%), especially miliaria, were the second most common dermatoses in this study. This is consistent with earlier reports, although some studies have documented higher prevalence rates of 30–40%, likely due to longer study duration and seasonal variation. The role of hot and humid climate, as emphasized in previous studies, remains an important contributing factor.

Pigmentary disorders (11%), particularly Mongolian spots, were commonly observed in neonates. However, the prevalence was lower compared to earlier Indian studies reporting 65–90%, as noted by Samanta and Achar and others. This discrepancy may be due to differences in healthcare-seeking behavior, as many parents do not seek medical attention for benign pigmentary lesions.

Nutritional dermatoses (<1%) were less common in the present study compared to Negi et al.²³ (17.5%), suggesting possible improvements in infant nutrition, awareness, or differences in study populations.

Overall, the present study confirms the findings of multiple earlier studies that:

- Physiological dermatoses predominate in neonates (Samanta and Achar; Nobbay and Chakrabarty; Baruah et al.),
- Infectious dermatoses are the most common in older infants (Awal et al., Rawat, Patel et al., Sacchidanand et al.), and
- Scabies remains a major public health concern, particularly in resource-limited settings (Jawade et al.²⁴, Sharma and Mendiratta).

However, variations in prevalence and pattern across studies highlight the influence of regional, climatic, socioeconomic, and healthcare-related factors. Early diagnosis, appropriate treatment, and parental education remain essential to reduce disease burden and prevent complications.

Limitation

The present study was conducted over a relatively short duration of six months with a sample size of 300 infants. Some etiological subgroups had fewer cases, which limited detailed subgroup analysis and seasonal comparison across a full calendar year.

CONCLUSION

There is an increasing trend in pediatric patients presenting with dermatological conditions. Although awareness among parents regarding pediatric dermatoses is improving, many infants still present at advanced stages of disease due to lack of education, poor socioeconomic conditions, overcrowding, inadequate sanitation, and limited access to health-care facilities. In this six-month cross-sectional study of 300 infants, infectious dermatoses were the most common skin disorders, particularly scabies and bacterial infections. These were followed by sweat gland disorders, pigmentary disorders, and dermatitis, especially seborrheic dermatitis and atopic dermatitis.

While the majority of neonatal dermatoses were physiological and benign, infectious and inflammatory conditions predominated in older infants. Early diagnosis, prompt treatment, improvement of hygiene practices, and proper parental counseling are essential to reduce disease burden and prevent complications.

To obtain a more comprehensive understanding of the epidemiology and seasonal variation of infant dermatoses, studies with larger sample sizes and longer study periods are recommended.

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