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**Original Research Article**

# Mucocutaneous manifestations in newborn: a study from tertiary care centre, Karnataka

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## ABSTRACT

**Background:** The spectrum of dermatological manifestations in neonates varies from era to era and country to country. Skin lesions in neonatal period vary from transient self-limiting conditions to serious dermatoses, requiring specific therapies. Skin lesions are extremely common in newborns and can be a significant source of parental concern. The objective of the study was to study various mucocutaneous lesions in newborn babies.
**Methods:** The present descriptive cross sectional observational study was conducted in department of dermatology, Navodaya Medical College, Raichur. A total 500 neonates were included in the study from January 2012 to September 2013. Data collected and analysed by using SPSS 16.0 version.
**Results:** Prevalence of skin lesions in this study was found to be 97.4%. Maximum skin lesions were observed in 47 subjects (9.4%). Prevalence of Epstein pearls was 58%, Mongolian spots 53.6% and erythema toxicum neonatorum was 28%. Epstein pearls (males 60.2%, female 55.7%) and Mongolian spots (males 53.9%, females 53.3%) predominated.
**Conclusions:** Prevalence of mucocutaneous skin lesions in newborn babies was 97.4%. High prevalence of Epstein pearls (58%), Mongolian spots (53.6%) and erythema toxicum neonatorum (28.6%) were observed.

**Keywords:** Mucocutaneous, Newborns

## INTRODUCTION

Newborn is phase of first 4 weeks of life immediately after birth. This applies to premature, term and post mature babies. At birth, newborn leaves the warm and sterile uterine environment and exposed to external environment with air and temperature changes. So newborn has to rapidly adopt to external environment where skin plays a vital role.[1] The skin of newborn is smooth vulnerable in appearance and histological features are same like as that of adult. They differ from adult in immaturity of collagen, hair follicle and sebaceous glands.[2] A host of aberrations varying from physiological and transient to grossly pathological are seen in the skin of a neonate. The spectrum of dermatological manifestations in neonates varies from era to era and country to country. Some of the most pertinent factors influencing the pattern of cutaneous changes include climate, race, nutrition, hygiene, socioeconomic status, customs, maternal factors, somatic make up and heredity.[3] Skin lesions in neonatal period varies from transient self limiting conditions to serious dermatoses, requiring specific therapies. Some of the dermatoses may have prognostic implications like congenital melanocytic nevus (CMN)), epidermolysis bullosa mandate genetic counselling and family planning.[4] Skin lesions are

extremely common in newborns and can be a significant source of parental concern. Worried parents often seek medical attention from dermatologist or pediatrician regarding skin lesions.[5]

Thus, a working knowledge of both normal and abnormal cutaneous lesions of the neonate is required to address these issues. Hence, the present study is undertaken to assess the prevalence of mucocutaneous lesions in this area of Karnataka.

***Objectives***

- To study various mucocutaneous lesions in newborn babies.

## METHODS

The present descriptive cross sectional observational study was conducted in department of dermatology, Navodaya Medical College, Raichur. The study was conducted after obtaining ethical clearance from Institutional Ethical Committee. The study population included the newborns enrolled from the labour room and paediatric OPD. A total 500 neonates were included in the study from January 2012 to September 2013

Within 24 hours of birth, the neonate was examined including general physical, systemic and dermatological examination and details were recorded. The neonate was under observation as long as stay in the hospital. Later the child was followed up in OPD. Further if required noninvasive investigations like examination of scrapings for candida, pus swab for bacterial culture, smears from pustules for gram staining and microscopic examination of Tzanck test from vesicles. Data was collected by using proforma and entered in MS excel sheet. It was later analysed by using SPSS 16.0 version.

***Inclusion criteria***

Inclusion criteria were age less than 4 weeks; those enrolled in labour room; those attending paediatric OPD; those admitted to hospital for various reasons; those who developed skin infections during their hospital stay.

***Exclusion criteria***

Exclusion criteria were those with complications like sepsis; those on medications.

## RESULTS

The present study involved 500 neonates, out of this, 487 developed one or more type of skin lesions during their first four weeks of extra uterine life. Thus the prevalence of skin lesions in this study was found to be 97.4%.

In our study out of 500 newborns, 256 were males i.e. 51.2% and 244 i.e. 48.8% were females. Also 415 i.e. 83% of them were full term (37-42 weeks), 61(12.2%) preterm (<37 weeks) and 24 (4.8%) post term (>42 weeks). Prevalence of caesarean was found to be 12.8% and 87.2% were normal vaginal deliveries.

**Table 1: Demographic distribution of newborns.**

| | | Number | % |
|---|---|---|---|
| **Gender** | Male | 256 | 51.2 |
| | Female | 244 | 48.8 |
| **Mode of delivery** | Cesarean section | 64 | 12.8 |
| | Vaginal delivery | 436 | 87.2 |
| **Term** | Preterm | 61 | 12.2 |
| | Full term | 415 | 83 |
| | Post term | 24 | 4.8 |

**Table 2: Distribution according to number of lesions.**

| | | Number | Percentage (%) |
|---|---|---|---|
| **Number of lesions** | 0 | 13 | 2.6 |
| | 1 | 40 | 8 |
| | 2 | 98 | 19.6 |
| | 3 | 99 | 19.8 |
| | 4 | 113 | 22.6 |
| | 5 | 90 | 18 |
| | 6 | 47 | 9.4 |

In our study we found that most of the neonates have four skin lesions i.e. 113 (22.6%). Maximum skin lesions were observed in 47 subjects (9.4%).

**Table 3: Distribution according to skin lesions.**

| | | Number | % |
|---|---|---|---|
| **Skin lesions** | Epstein pearls | 290 | 58 |
| | Mongolian spots | 268 | 53.6 |
| | Erythema toxicum neonatorum | 143 | 28.6 |
| | Sebaceous hyperplasia | 123 | 24.6 |
| | Milia | 106 | 21.2 |
| | Salmon patches | 104 | 20.8 |
| | Port wine nevus | 12 | 2.4 |
| | Icterus | 94 | 18.8 |
| | Epidermal nevus | 64 | 12.8 |
| | Lanugo | 63 | 12.6 |
| | Diaper dermatitis | 95 | 19 |
| | Café au lait spots | 7 | 1.4 |
| | Peripheral cynosis | 40 | 8 |
| | Acne neonatarum | 38 | 7.6 |
| | Miliaria | 34 | 6.8 |
| | Occupational alopecia | 33 | 6.6 |
| | Hypertrichosis | 25 | 5 |
| | Desquamation | 17 | 3.4 |
| | Omphalitis | 16 | 3.2 |
| | Adnexal polyps | 16 | 3.2 |
| | Hemangiomas | 14 | 2.8 |
| | Scrotal pigmentation | 59 | 11.8 |
| | Sebaceous nevi | 14 | 2.8 |
| | Strawberry marks | 8 | 1.6 |

The study encountered wide range of skin lesions. Epstein pearls were common skin lesions affecting 290 neonates i.e. 58% followed by mongolian spots in 53.6% neonates. Erythema toxicum neonatorum was seen in 28% of subjects.

**Table 4: Distribution of skin lesions according to gender.**

| | Male (n=256) | | Female (n=244) | | P value |
|---|---|---|---|---|---|
| | No | % | No | % | |
| **Erythema toxicum neonatorum** | 74 | 28.9 | 69 | 28.3 | 0.88 |
| **Epstein pearls** | 154 | 60.2 | 136 | 55.7 | 0.32 |
| **Milia** | 55 | 21.5 | 51 | 20.9 | 0.87 |
| **Diaper dermatitis** | 32 | 12.5 | 27 | 11.1 | 0.62 |
| **Omphalitis** | 10 | 3.9 | 6 | 2.5 | 0.36 |
| **Mongolian spots** | 138 | 53.9 | 130 | 53.3 | 0.89 |
| **Epidermal nevus** | 27 | 10.5 | 37 | 15.2 | 0.12 |
| **Sebaceous hyperplasia** | 65 | 25.4 | 58 | 23.8 | 0.67 |
| **Scrotal pigmentation** | 14 | 2.8 | 0 | 0 | 0 |
| **Port wine nevus** | 52 | 20.3 | 48 | 19.7 | 0.86 |
| **Hypertrichosis** | 14 | 5.5 | 11 | 4.5 | 0.62 |
| **Desquamation** | 9 | 3.5 | 8 | 3.3 | 0.88 |
| **Hemangiomas** | 8 | 3.1 | 6 | 2.5 | 0.65 |
| **Miliaria** | 23 | 9.0 | 11 | 4.5 | 0.05 |
| **Salmon patch** | 40 | 15.6 | 64 | 26.2 | 0.001 |
| **Adnexal polyp** | 7 | 2.7 | 9 | 3.7 | 0.54 |
| **Café au lait spots** | 18 | 7.0 | 30 | 12.3 | 0.05 |
| **Sebaceous nevi** | 3 | 1.2 | 5 | 2.0 | 0.43 |
| **Icterus** | 53 | 20.7 | 41 | 16.8 | 0.26 |
| **Occupational alopecia** | 16 | 6.3 | 17 | 7.0 | 0.75 |
| **Lanugo** | 29 | 11.3 | 34 | 13.9 | 0.38 |
| **Peripheral cynosis** | 22 | 8.6 | 18 | 7.4 | 0.62 |
| **Acne neonatarum** | 21 | 8.2 | 17 | 7.0 | 0.6 |

Comparison of frequency skin lesions in neonates is made between genders. In both genders, Epstein pearls (males 60.2%, female 55.7%) and Mongolian spots (males 53.9%, females 53.3%) predominated. On comparison by statistical analysis, male babies had significantly high frequency of miliaria ($p<0.05$) whereas female neonates had significantly high frequency of salmon patches ($p<0.05$) and café au lait spots ($p<0.05$).

## DISCUSSION

In our study out of 500 newborns, 256 were males i.e. 51.2% and 244 i.e. 48.8% were females. Also 415 i.e. 83% of them were full term (37-42 weeks), 61 (12.2%) preterm (<37 weeks) and 24 (4.8%) post term (>42 weeks) (Table 1). In first 28 days of life skin of neonate goes through changes. These conditions are very common and expected.

In our study, prevalence of skin lesions in this study was found to be 97.4% (Table 1).

Prevalence of neonatal cutaneous findings in literature has been reported to be between 57% to 99.3%. Mosavi et al reported that 96% of Iranian newborns had at least one cutaneous lesions.[6] Rivers et al found the prevalence of cutaneous lesions in Australian newborns was 99.3%.[7] Ekiz et al showed that the prevalence of cutaneous lesions was 67.3% in Turkish newborns.[8] Our findings are almost similar with the above mentioned studies.

In our study we found that most of the neonates have four skin lesions i.e. 113 (22.6%). Maximum skin lesions were observed in 47 subjects (9.4%) (Table 2).

The study encountered wide range of skin lesions. Epstein pearls were common skin lesions affecting 290 neonates i.e. 58% followed by Mongolian spots in 53.6% neonates. Erythema toxicum neonatorum was seen in 28% of subjects (Table 3).

A study conducted in Chandigarh among new borns for a period of 7 months. Commonly observed lesions were Epstein pearls in 88.7%, Mongolian spots in 62.2% milia in 34.9%, sebaceous hyperplasia in 31.8%, salmon patch in 28.4% and erythema toxicum neonatorum in 20.6%. These figures are almost comparable with our study findings.[9]

In another study from SGBT hospital, Amritsar that was conducted in 500 newborn babies, coutaneous lesions

were found in 474 (94.8%) newborns. The lesions observed were Epstein pearls in 305 (61%), Mongolian spots in 301 (60.2%), superficial cutaneous desquamation in 200 (40%), icterus in 128 (25.6%), milia in 119 (23.8%), sebaceous gland hyperplasia in 107 (21.4%).[10]

Kulkarni et al studied 2221 consecutive live births in whom he observed that Mongolian spots (72%), Epstein pearls (43.8%), milia (26.2%), erythema toxicum (25.2%).[11]

Comparison of frequency skin lesions in neonates is made between genders. In both genders, Epstein pearls (males 60.2%, female 55.7%) and Mongolian spots (males 53.9%, females 53.3%) predominated. On comparison by statistical analysis, male babies had significantly high frequency of miliaria ($p<0.05$) whereas female neonates had significantly high frequency of salmon patches ($p<0.05$) and café au lait spots ($p<0.05$) (Table 4).

Gender has the association with skin lesion. Ekiz found the prevalence of genital hyperplasia and milia was significantly higher in males.[12] In our study both gender showed prominence of Epstein pearls and Mongolian spots when compared with other lesions. Male babies had significantly higher frequency of miaria whereas female had higher frequency of salmon patches and café au lait spots.

## CONCLUSION

Our study showed 97.4% prevalence of mucocutaneous skin lesions in newborn babies in this urban part of Karnataka. Most commonly observed were Epstein pearls (58%), Mongolian spots (53.6%) and erythema toxicum neonatorum (28.6%). Male babies had significantly high frequency of miliaria ($p<0.05$) whereas female neonates had significantly high frequency of salmon patches ($p<0.05$) and café au lait spots.

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