Original Research Article

Profile of neonatal dermatoses in a tertiary care teaching hospital of Haryana

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Received: 05 January 2018  
Accepted: 03 February 2018

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ABSTRACT

Background: To assess the incidence and profile of neonatal dermatoses in a tertiary care hospital of Haryana and study its association with various perinatal risk factors.

Methods: All inborn neonates (<28 days of life) including those seen in the outpatient department on follow up between November 2016 to April 2017 formed the baseline population and babies with skin lesions were included in the study. A detailed perinatal history and newborn examination of the baby was done by a pediatrician and all relevant details were recorded. Data was analyzed, and inferences were drawn using tables.

Results: In our study, a total of 2760 newborn (1506 (54.6%) males and 1254 (45.4%) females) were studied. The incidence of neonatal dermatoses was found to be 94.1%. There were 1849 (66.9%) term, 853 (30.9%) preterm, and 58 (2.1%) post term neonates. 1901 (68.8%) had birth weight >2.5kg while 859 (31.1%) had birth weight ≤2.5kg. 1223 (44.3%) were born to primipara while 1537 (55.6%) were born to multipara mothers. Mothers of 54 (1.9%) neonates were < 20 years of age; 1157 (41.9%) in the age group of 20-25 years; 1324 (47.9%) in the age group of 25-30 years and 225 (8.1%) in the age group >30 years. 1806 (65.4%) neonates were born by normal vaginal delivery and 954 (34.6%) neonates were born by cesarean section. In 13 (0.5%) neonates, history of consanguinity was present while it was absent in 2747 (99.5%) neonates. Most common skin lesions observed were transient skin lesions among which Mongolian spots (62.9%), epstein pearls (48.8%), erythema toxicum (41.8%), milia (40.6%) and miniature puberty (35.9%) were the most common.

Conclusions: Incidence of neonatal dermatoses was found to be higher (54.6%) among males as compared to females (45.4%); among term babies; those with birth weight >2.5kg; those born to multipara mothers; those born via normal vaginal delivery and those with maternal age 25-30 years.

Keywords: Dermatoses, Incidence, Neonate, Risk factors

INTRODUCTION

Skin of a neonate plays an important role in transition from an aqueous to an air-dominant environment by providing mechanical protection, assisting thermoregulation, immune-surveillance and fluid balance.¹ The skin of the infant differs from that of an adult by being thinner, delicate, weaker intercellular attachments and fewer sweat and sebaceous gland secretions. So, it is more susceptible to severe infections.² Neonatal dermatoses include a spectrum of cutaneous disorders appearing during the first 4 weeks of life. Nearly 99.3% neonates have been found to be affected with various skin manifestations.³

Majority of these are transient and physiological and disappear without any treatment while only few are pathological.⁴
Neonatal dermatoses are classified as follows:

- Transient skin disorders.
- Congenital disorders- birthmarks and genodermatoses.
- Acquired skin disorders specific to the neonatal period.
- Iatrogenic dermatological complications.  

Skin changes are affected by heredity, race, gestational age and maternal health in addition to other external factors such as hygiene, socioeconomic status, customs, mode of delivery etc. Neonatal dermatoses are a very common cause of parental anxiety and concern pressing the need for appropriate diagnosis and counseling of parents. This avoids unnecessary diagnostic and therapeutic interventions. A number of studies have been reported on neonatal dermatoses but none from this region of India. We, therefore, planned this study to assess the incidence and profile of neonatal dermatoses from a tertiary care teaching hospital of north India and to study its association with various perinatal risk factors.

**METHODS**

A cross-sectional descriptive study was carried out in a tertiary care teaching hospital of north India.

**Inclusion criteria**

All inborn neonates <28 days of life including those visiting outpatient department (OPD) on follow up between November 2016 to April 2017 formed the baseline population and those with any skin lesions were included in the study.

**Exclusion criteria**

- Neonates >28 days of life.
- Neonates with maternal history of drug/alcohol abuse.
- Neonates with gross congenital malformations.
- Critically sick neonates.
- Neonates with jaundice, cyanosis and pallor.
- Neonates born outside our hospital.

A written informed consent was taken from the parents/guardians of each neonate included in the study. Detailed maternal history including age, parity, mode of delivery, history of consanguinity and any illness during pregnancy was recorded. Complete examination of baby including general, systemic and dermatological (skin, scalp, mucous membranes, genitalia, hair and nails) was done after proper hand hygiene under adequate light and ambient temperature and all relevant details were recorded. Diagnosis was made by pediatrician after clinical examination and wherever required dermatology consultation was done to confirm the diagnosis. Data was analyzed and inferences were drawn using tables and statistical analysis was done using Chi-square test and Z-proportion.

**RESULTS**

Out of 2926 neonates, 2760 (94.1%) had skin lesions. Most common skin lesions observed were transient skin lesions. The profile and frequency of lesions has been detailed in Table 1.

**Table 1: Profile of cutaneous lesions in our study.**

| Dermatological condition                       | % of neonates n=2760 |
|-----------------------------------------------|----------------------|
| **Transient skin disorders**                  |                      |
| Mongolian spots                               | 1738 (62.9)          |
| Epstein pearls                                | 1347 (48.8)          |
| Erythema toxicum neonatorum                   | 1156 (41.8)          |
| Milia                                         | 1123 (40.6)          |
| Miniature puberty                             | 993 (35.9)           |
| Sebaceous gland hyperplasia                   | 876 (31.7)           |
| Vernix caseosa                                | 754 (27.3)           |
| Lanugo hair                                   | 652 (23.6)           |
| Caput succedaneum                             | 342 (12.4)           |
| Physiological scaling of newborn              | 298 (10.7)           |
| Miliaria                                      | 245 (8.8)            |
| Transient neonatal pustular melanosing        | 227 (8.2)            |
| Cradle cap                                    | 59 (2.1)             |
| Neonatal alopecia                             | 34 (1.2)             |
| Sucking blister                               | 25 (0.9)             |
| Cephalhematoma                                | 18 (0.6)             |
| Salmon patch                                  | 18 (0.6)             |
| Neonatal acne                                 | 17 (0.6)             |
| Hypertrichosis                                | 7 (0.2)              |
| **Congenital disorders and Genodermatoses**   |                      |
| Sacrococcygeal dimple/sinus                   | 87 (3.1)             |
| Benign neonatal hemangiomatoses               | 41 (1.5)             |
| Pre-auricular skin tag                        | 34 (1.2)             |
| Cleft lip and cleft palate                    | 31 (1.1)             |
| Natal teeth                                   | 26 (0.9)             |
| Congenital melanocytic nevus                  | 15 (0.5)             |
| Café-au-lait macules                          | 13 (0.4)             |
| Accessory finger                              | 9 (0.3)              |
| Collodion baby                                | 2 (0.07)             |
| **Acquired skin disorders specific to Neonatal period** |                      |
| Diaper dermatitis                             | 345 (12.5)           |
| Neonatal oral candidises                      | 128 (4.6)            |
| Omphalitis                                    | 57 (2)               |
| Infantile seborrhoeic dermatitis              | 34 (1.2)             |
| Neonatal scabies                              | 17 (0.6)             |
| Neonatal varicella syndrome                   | 2 (0.07)             |
| **Iatrogenic dermatologic Complication**      |                      |
| Irritant contact dermatitis                   | 35 (1.2)             |

Various neonatal and maternal factors studied are depicted in Table 2 and 3. Out of 2760 neonates, 1506 (54.6%) were male and 1254 (45.4%) were female. There
were 1849 (66.9%) term, 853 (30.9%) preterm, and 58 (2.1%) post term neonates. 1901 (68.8%) had birth weight >2.5kg while 859 (31.1%) had birth weight ≤2.5kg. A total of 1223 (44.3%) neonates were born to primipara while 1537 (55.6%) were born to multipara mothers. Mothers of 54 (1.9%) neonates were < 20 years of age: 1157 (41.9%) in the age group of 20-25 years; 1324 (47.9%) in the age group of 25-30 years and 225 (8.1%) in the age group >30 years. 1806 (65.4%) neonates were born by normal vaginal delivery and 954 (34.6%) were born by cesarean section. In 13 (0.5%) neonates, history of consanguinity was present while it was absent in 2747 (99.5%) neonates.

### Table 2: Relationship of skin lesions with neonatal factors.

| Neonatal factor | n (%) | P- value |
|----------------|-------|----------|
| **Sex**        |       |          |
| Male           | 1506 (54.6) | 0.0001   |
| Female         | 1254 (45.4) |          |
| **Maturity**   |       |          |
| Preterm        | 853 (30.9)  | 0.0001   |
| Term           | 1849 (66.9) |          |
| **Birth weight** |     |          |
| <2.5kg         | 859 (31.1)  | 0.0001   |
| ≥2.5kg         | 1901 (68.8) |          |

### Table 3: Relationship of skin lesions with maternal factors.

| Maternal factor | n (%) | P- value |
|----------------|-------|----------|
| **Parity**     |       |          |
| Primipara      | 1223 (44.3) | 0.0001*  |
| Multipara      | 1537 (55.6) |          |
| **Maternal age** |     |          |
| <20yrs         | 54 (1.9)    |          |
| 20-25yrs       | 1157 (41.9) |          |
| 25-30yrs       | 1324 (47.9) |          |
| >30yrs         | 225 (8.1)   |          |
| **Mode of delivery** |   |          |
| NVD            | 1806 (65.4) |          |
| LSCS           | 954 (34.6)  | 0.0001*  |
| **History of consanguinity** | |          |
| Present        | 13 (0.4)    |          |
| Absent         | 2747 (99.5) | 0.0001*  |

### DISCUSSION

Cutaneous lesions are not uncommon among neonatal age group. Many studies have been conducted to evaluate the incidence and profile of neonatal dermatoses. In our study, incidence of neonatal dermatoses was found to be 94.1%. The incidence of neonatal dermatoses in various studies lies between 57% and 99.3%. This variability may be due to variations in study methods, demography, various environmental and racial factors. Our observation was similar to the findings of Sachdeva et al, Shehab et al, Patel et al, Gorur et al and Gokdemir et al. Most common dermatoses observed in index study were transient skin lesions among which Mongolian spots (62.9%), Epstein pearls (48.8%), erythema toxicum (41.8%), milia (40.6%) and miniature puberty (35.9%) were the most common ones in order.

Mongolian spots are flat, bluish-black macules caused by the arrest of melanocytic migration in the dermis of the embryo. Most commonly found in lumbo-sacral area but can also found on the legs, back, flank and shoulders. The greater the degree of natural pigmentation, the higher is the occurrence of Mongolian spots in a newborn. Our finding was consistent with the studies of Gorur, Dash, Baruah, Aggarwal, Kunju and Sandeep et al. However, Gokdemir and Hogade et al observed a lower incidence of Mongolian spots in their studies which can be due to various demographical factors or small sample size. Epstein pearls were observed in 48.8% of neonates in our study which is similar to the findings of Sachdeva et al, Gokdemir et al, Aggarwal et al and Kunju et al while Jain et al and Sandeep et al found a lower incidence of Epstein pearls in their studies.

Erythema toxicum are yellow-white papulo-vesicular lesions that develop primarily on trunk, arms and legs. Each lesion is surrounded by an erythematous area giving it a flea-bitten appearance. Immaturity of pilo-sebaceous follicles plays a role in its development. These usually resolve spontaneously without treatment. These were observed among 41.8% of neonates in our study which is similar to the observations of Jain et al and Sandeep et al while studies by Gokdemir et al, Aggarwal et al and Hogade et al observed a lower incidence of erythema toxicum. Milia are superficial epidermal inclusion cysts. Mostly found in forehead, cheeks and nose as whitish papules. These resolve spontaneously. In our study, milia were observed in 40.6% of neonates which is similar to the observation of Aggarwal et al. Other studies observed an incidence between 6.4% to 27%. Evidence of miniature puberty was found in 35.9% of neonates in our study which is similar to the observations of Gokdemir et al (43.5%) and Zagne et al (42.86%) while Jain et al observed miniature puberty as the most common neonatal dermatoses with an incidence of 71%, Among congenital disorders and genodermatoses, sacrococcygeal dimple/sinus (3.1%) and benign neonatal hemangiomas (1.5%) were most common followed by cleft lip and cleft palate (1.2%); and pre-auricular skin tag (1.1%).

Most common acquired skin lesions observed in our study were diaper dermatitis (12.5%), Neonatal oral candidiasis (4.6%), Omphalitis (2%). Infantile
seborrhoeic dermatitis (1.2%), Neonatal scabies (0.6%), Neonatal Varicella Syndrome (0.07%) while the only iatrogenic skin lesion observed in our study was irritant contact dermatitis (1.2%). We also observed two cases of collodion babies and Neonatal Varicella Syndrome which are relatively rare findings.

Among neonatal factors, incidence of neonatal dermatoses was found to be more among males, term babies and in those with weight ≥2.5kg and this difference was found to be statistically significant. Among maternal factors, incidence of neonatal dermatoses was found to be more among multipara mothers, mothers in the age group of 25-30 years and neonates born via normal vaginal delivery which was statistically significant. In majority of the neonates (99.5%) there was no history of consanguinity. These findings are similar to the observations from previous studies.6,10,12,16,37

CONCLUSION

We conclude that neonatal dermatoses though not an uncommon clinical finding includes a wide variety of skin lesions. As most of these lesions are transient and self-limiting, appropriate knowledge about these might go a long way in differentiating these from pathological lesions so as to avoid unnecessary or inappropriate management. Also, timely parental counseling should be done explaining them about the benign nature of these lesions so as to allay anxiety.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Marwah P, Marwah A, Kumar S, Kumar R. Profile of neonatal dermatoses in a tertiary care teaching hospital of Haryana. Int J Res Med Sci 2018;6:955-8.