Pattern of Dermatosis Among the Admitted Neonates in A Tertiary Care Hospital

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INTRODUCTION
Skin conditions encountered in newborns that tend to resolve by 30 days of age are considered to be transient1. They are very common and many are expected in newborns. Transient neonatal disorders characterized by a variety of clinical features and a benign course2. A thorough knowledge of these condition is mandatory in order to properly differentiate between benign disorders and other important conditions such as infections or autoimmune disorders or genodermatosis3.

Skin of neonate plays an important role in transition from an aqueous to an air-dominant environment by providing mechanical protection, assisting thermo regulation, immune-surveillance and fluid balance4. 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, weaker temperature regulation. So neonatal skin is more susceptible to severe infections5.

Majority of physiological neonatal dermatosis disappear without any treatment while only few are pathological6.
Neonatal dermatosis are classified as follows:
- Transient skin disorders
- Congenital disorders- birthmarks (Nevus) Genodermatosis
- Acquired skin disorders specific to the neonatal period
- Iatrogenic dermatological complications

Skin changes are affected by hereditary, race, gestational age and maternal health in addition to other external factors such as hygiene, socioeconomic status, customs, mode of delivery etc. Neonatal dermatosis 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 dermatosis but none from this region of Bangladesh. So, our study is to assess the incidence and profile of neonatal dermatoses and its association with various perinatal risk factors in a neonatal ward of a Tertiary Care Teaching Hospital of Chattogram.

MATERIALS AND METHODS
A cross-sectional descriptive study was carried out in a Tertiary Care Teaching Hospital of Chattogram. All admitted neonates <28 days of life in neonatal ward between August 2017 to November 2017 with or without skin lesion were included in the study and neonate >28 days of life, neonates with gross congenital malformations and critically sick neonate on ventilator were excluded. A total of 1000 admitted neonates in a four month period in neonatal ward of a tertiary care hospital were examined. A detailed history, general, systemic and dermatological examination including hair, nail and mucous membrane of each neonate was carried out. Birth history and relevant maternal history including age parity, mode of delivery, history of consanguinity and any illness during pregnancy, any maternal history of dermatological diseases were recorded in a proforma. Adequate light, proper hand washing and sterilization procedure were done before examination of neonate. Photographic records were maintained with consent from parents. Simple laboratory procedures were performed as required, like skin scraping or gram staining. Data was analyzed and inferences were drawn using tables and statistical analysis was done by chi-square test and t-test (One sample).

RESULTS
A total of 300(30%) newborns had one or more skin lesions out of 1000 newborns examined. The profile and frequency of skin lesions has been detailed in table I.

Table I: Showing incidence of the common dermatosis in the present study

| Neonatal Dermatosis         | Number | Percentage |
|-----------------------------|--------|------------|
| Physiological scaling       | 50     | 16%        |
| Acne neonatorum             | 38     | 12.66%     |
| Erythema toxicum neonatorum | 35     | 11%        |
| Milia                       | 26     | 8.66%      |
| Miliaria                    | 24     | 8%         |

Out of 300 neonates with skin lesions, 45% (135) were female and 55% (165) were male. Male: Female ratio was 1.14:1. 162(54%) neonates delivered vaginally and 138(46%) were delivered by caesarean section. 252(84%) were delivered in hospital and 48(16%) were delivered in home. Among the 300 neonates, 12(4%) were preterm, 279(93%) were term, 9(3%) were post-dated.

About birth weight of neonates 21(7%) neonate had a birth weight of less than 2kg, 99(33%) weighted 2-2.5kg, 27(9%) weighted 2.6-2.9kg, 113(37%) weighted 3kg and 40(13%) weighted 3.5kg. Among the mothers of neonates-mothers of 30(10%) neonates were less than 20 years old, 105(35%) were 20-24 years old, 130(43%) were 25-30 years old and 35(11%) were older than 30 years. About parity of mothers-114(38%) were primigravida, 186(62%) were multipara.

Table II: Relationship of skin lesion with neonatal factors

| Neonatal factors | Number | (%)     | p-value |
|------------------|--------|---------|---------|
| Sex              |        |         |         |
| Male             | 165    | 55%     | 0.000   |
| Female           | 135    | 45%     |         |
| Maturity         |        |         |         |
| Preterm          | 12     | 4%      |         |
| Term             | 279    | 93%     | 0.000   |
| Post dated       | 9      | 3%      |         |
| Birth weight     |        |         |         |
| <2 Kg            | 21     | 7%      |         |
| 2-2.5 Kg         | 99     | 33%     | 0.000   |
| 2.6-2.9 Kg       | 27     | 9%      |         |
| 3 Kg             | 113    | 37%     |         |
| 3.5 Kg           | 40     | 13%     |         |
Table III: Relationship of skin lesions with maternal factors

| Maternal factors | number | (%)  | p-value |
|------------------|--------|------|---------|
| Parity           |        |      |         |
| Primigravida     | 114    | 38%  | 0.000   |
| Multipara        | 186    | 62%  |         |
| Maternal age     |        |      |         |
| <20yrs           | 30     | 10%  | 0.000   |
| 20-24yrs         | 105    | 35%  |         |
| 25-30yrs         | 130    | 43%  |         |
| >30yrs           | 35     | 11%  |         |
| Mode of delivery |        |      |         |
| NVD              | 162    | 54%  | 0.000   |
| LSCS             | 138    | 46%  |         |

Figure 1: Harlequin Ichthyosis

Figure 2: Epidermolysis bullosa

Figure 3: Milia

Figure 4: Lanugo hair

Figure 5: Dysquamation

Figure 6: Acne neonatorum

Figure 7: Erythema toxicum neonatorum
DISCUSSION

The spectrum of neonatal dermatosis and their differentiation from the more significant cutaneous disorders of the neonates is critical. Transient skin lesions in some neonates were overlapped with other infectious diseases. By careful examinations and expert dermatological opinion will help to distinguish.

In our observation most common dermatosis were transient skin lesions. Among the transient skin disorders that required no treatment, Physiological scaling was significantly higher (16%) among neonates delivered by caesarean sections. Acne neonatorum was seen in 39 neonates (13%) most commonly in term neonates. Sebum secretion is high in neonates due to sebaceous gland activity reflects the stimulation by placentally transferred maternal androgen, particularly by dehydroepiandrosterone.

Erythema toxicum neonatorum is an idiopathic common condition seen in 11% term neonates in our study which should be distinguished from other infective and non infective pustular disorders. Lesions are papulovesicular or vesiculopustular surrounded by an erythematous area giving it a flea-bitten appearance. Erosions started within 2-3 days of birth and last for 15 days, resolve spontaneously without treatment.

Marchini et al suggested that ETN may be considered as an innate immune response to commensal microbes penetrated into the newborn skin. Smellie stated that some features of ETN - ‘the red gum’ - are a common process linked to a too long exposure with the meconium. Our study were similar to the observations of Jain et al and Sandep et al.

Physiological scaling is one of the most common findings. It was seen in 50(16%) neonates in our study, compared to a study by Nobby et al where the frequency of occurrence was 72.4%, whereas Sachdeva et al report a similar finding. We also observed that physiological scaling was significantly higher among neonates delivered by caesarean sections which was previously reported by Zagne et al.

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 9% neonates which is similar to the observation of Aggarwal et al.

Miliaria is a group of transient eccrine disorders due to occlusion of sweat ducts at various levels, resulting in leakage of sweat in the epidermis or papillary dermis. Miliaria in our study seen in 24(8%) neonates similar to the study of Agarwal et al in North India that showed Miliaria in 40% neonates.

Vernix caseosa is a protective biofilm forms a mechanical ‘shield’ against maceration by amniotic fluid and bacterial infection composed of water, protein and lipid. It was seen in 12(4%) neonates. It was seen most commonly on 1st day of life.

Transient neonatal pustulosis is a self limited, benign dermatosis of the neonates and occurs in approximately 0.2%-4% of all term neonates. The eruption is always present at birth. Lesions are pigmented macules coexist with flaccid vesiculopustules with no surrounding erythema located on the chin, neck, nape, upper chest, lower back and buttock. We found 6 cases of this dermatosis in our study.

Cradle cap or milk crust means common congenital scaling observed on the vertex, generally believe to represent persisting vernix affecting scalp, eyebrows, forehead, retro-auricular area and folds of the neck and groin with the influence of maternal hormones on sebum production. We found 20(6%) cases of cradle cap.

Mongolian spot observed in our study located over the lumbosacral region, ankle and thigh but are few in number, 9(3%) cases in comparison with other study such as Nanda et al 62.2%, Sachdeva et al (60.2%) .

Diaper dermatitis is a generic term applied to rashes by various skin disorders and/or irritants (Usually feces) in the diaper area with secondary bacterial or fungal infection. 6(2%) neonates had diaper dermatitis in our study.

Congenital melanocytic nevi in neonates showed a prevalence of 0.4 to 15.6%. It was seen in 3 neonates in this study.

Iatrogenic bruises were exclusively obserbed in the neonates who were admitted in the NICU, with an incidence of 2% in the present study, mainly because of the insertion of an intravenous cannula and needle puncture for various diagnostic and therapeutic procedure in the NICU. The most common sites were dorsum of hands and feet. Fontanele and Cardoso, in their study on hospitalized neonates, observed hematoma in 46%, erythema in 18%, echymosis in 10%. Bruises were more common among preterm neonates and those with low birth weight.

Cutis Marmorata is a physiologic red–blue reticulated mottling of the skin of newborn infants. It is seen as an immature physiologic response to cold with resultant dilatation of capillaries and small venules. Skin findings usually disappear with rewarming and the phenomenon resolves as the child gets older. We found 21(7%) neonates with this change in our study.
There were one (0.9%) clinically diagnosed case of Epidermolysis bullosa, a Genodermatosis, one (0.9%) case of Congenital ichthyosiform erythroderma, one (0.9%) case of Neonatal purpura fulminants, 9 (3%) cases of benign neonatal hemangiomas and one case of Congenital varicella syndrome which are rare disease were observed in our study.

CONCLUSION
The hospital based incidence of neonatal dermatoses was 30% in our study. Genetic, environmental, maternal and neonatal factors may influence the occurrence of certain skin lesions. As most of the lesions are transient and self-limiting, appropriate knowledge about these might go a long way in differentiating these from pathological lesions to avoid unnecessary or inappropriate management which shows the importance of a dermatologist in the neonatal unit of a hospital. Also, timely parental counseling should be done explaining them about the benign nature of these lesions to relieve anxiety of parents.

DISCLOSURE
All the authors declared no competing interest.