

# Variations of Dermatological Findings in New-Borns of a Community Hospital in Nepal

Shrestha A<sup>1</sup>, Shrestha S<sup>2</sup>

## Abstract

**Introduction:** Skin manifestations are common in neonates. The prevalence of skin changes and their association with neonatal and maternal factors are not adequately documented in Nepal. It is important to differentiate common benign skin lesions from infrequent skin changes that cause morbidity, requiring medical management. The objectives of this study were to determine the pattern of skin lesions in new-borns and their association with maternal and neonatal variables. **Material and Methods:** This was a prospective, cross-sectional study conducted in obstetric unit of the hospital from December 2016 to May 2017. Outborn babies and babies shifted to NICU were excluded. **Results:** A total of 935 new-borns were examined. The commonest skin lesions were Mongolian spot (66.7%), Erythema toxicum (46.6%), Milia (44.4%), Epstein pearls (26.4%) and Salmon patch (11.9%). Mothers aged 35 years or older (63.6%) had statistically significant association with Erythema toxicum ( $p=0.01$ ). Erythema toxicum was more in primiparity, term pregnancy and caesarean section delivery. Milia was associated with male babies. Salmon patch was seen more in term pregnancy. Congenital melanocytic nevus, haemangioma and port-wine stain were noted in three, two and one new-borns respectively, which alter morbidity and hence are important to diagnose in time. **Conclusion:** We found that 93.8% of neonates had at one or more skin lesions. The majority of skin lesions were benign and transient. Erythema toxicum was seen commonly in mothers aged 35 and more. Salmon patch was seen more in term pregnancy.

**Key words:** Dermatoses, Maternal, Neonatal

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## Introduction

The skin of the neonate differs from adult in several ways. The thickness of new-born skin is 40% to 60% of that of adult skin. It has weaker intercellular attachment and produces lesser amount of sweat<sup>1</sup>.

Majority of skin changes are benign, physiological, transient and self-limited. However, they can be distressing for parents leading them to seek medical attention. Moreover, a small number of skin lesions in new-born maybe medically significant, requiring intervention.

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Skin changes are seen in most of the new-borns. Moreover, various maternal and neonatal factors may be associated with specific skin lesions. However, there is paucity of data related to skin changes in new-borns in Nepal.

## Material and Methods

This was a prospective, cross sectional study conducted in obstetric unit of the hospital, from December 2016 to May 2017. All babies born during this six months period were included. Babies born outside the hospital, stillbirths and babies requiring NICU admission were excluded.

Thorough examination of the new-borns was done. The neonates were undressed and examined in broad day light from head to toe for skin changes. The age, ethnicity and parity of mothers were noted. The gestational age, mode of delivery, sex, birth weight of the new-borns were also noted.

Universal sampling method was used. Ethical approval was taken from the Institutional Review Committee (IRC). A written consent was taken from all parents. All obtained data were entered in Microsoft excel and analysed by SPSS 23. Descriptive data was tabulated in frequency and percentage. Bivariate analysis was done with chi-square test for categorical data.

## Results

Total of 935 healthy new-borns were included in the study. Maternal and neonatal features are shown in tables 1, 2 and 3.

**Table 1:** Maternal features

	Number (n=935)	Percentage (%)
<b>Ethnicity</b>		
Tamang	265	28.3
Newar	226	24.2
Brahmin	200	21.4
Chhetri	173	18.5
Dalit	71	7.6
<b>Age</b>		
<18 yrs	10	1.1
18-34 yrs	881	94.2
>34 yrs	44	4.7
<b>Parity</b>		
Primi	578	61.8
Multi	357	38.2

**Table 2:** Period of gestation and mode of delivery

	Number (n=935)	Percentage (%)
<b>Period of gestation</b>		
<37 weeks	51	5.5
37- 42 weeks	881	94.2
> 42 weeks	3	0.3
<b>Mode of delivery</b>		
Vaginal	655	70.1
Caesarean	275	29.4
Instrumental	5	0.5

**Table 3:** Neonatal features

	Number (n=935)	Percentage (%)
<b>Gender</b>		
Male	492	52.6
Female	443	47.4
<b>Weight</b>		
<2.5 kg	121	12.9
>2.5 kg	814	87.1

In this study, 93.8% cases had at least one skin lesion. Mongolian spot (66.7%) was the commonest skin lesion noted, followed by Erythema toxicum (46.6%), Milia (44.4%), Epstein Pearl (46.6%), salmon patch (11.9%) respectively (Table 4).

**Table 4:** Common skin findings

Skin Lesions	Number (n)	Percentage (%)
Mongolian spot	624	66.7
Erythema toxicum	436	46.6
Milia	415	44.4
Epstein pearl	247	26.4
Salmon patch	111	11.9
Malaria	22	2.4
Pustulosis	6	0.6
Congenital melanocytic nevus	3	0.3
Hemangioma	2	
Port wine stain	1	

Common cutaneous lesions and their association with maternal and neonatal variables are shown in Table 5.

Erythema toxicum was associated with increasing maternal age, as 63.6% of the mothers aged 35 and above had erythema toxicum, which was statistically significant ( $p$  value= 0.01) as shown in Table 6. Erythema toxicum was also more in primiparity, term and post term deliveries and caesarean section deliveries ( $p >0.05$ ).

**Table 5:** Cutaneous lesions and related maternal and neonatal factors

Cutaneous Lesions	Maternal and Neonatal Factors
Mongolian spot	Did not vary according to ethnicity, parity, period of gestation, weight, gender of baby Maternal age > 34 years had statistically significant association (p= 0.01)
Erythema toxicum	Seen more in primi mother, term pregnancy, caesarian section, male gender and appropriate birth weight (> 2.5 kg) babies
Milia	Seen more in term, post term and male gender babies
Epstein pearl	Seen more in post term, caesarian and instrumental delivery
Salmon Patch	Seen more in term pregnancy, primi mother, male and adequate birth weight (> 2.5 kg) babies

**Fig 1:** Showing Mongolian spot on the buttocks**Fig 3:** Milia is seen on the tip of the nose and cheeks**Table 6:** Relation of Erythema toxicum with maternal age

Maternal Age in years (Number)	n (%)	p-value
< 18	2 (20)	0.01
18- 34	406 (46.1)	
> 34	28 (63.6)	

\* p- value of < 0.05 is statistically significant.

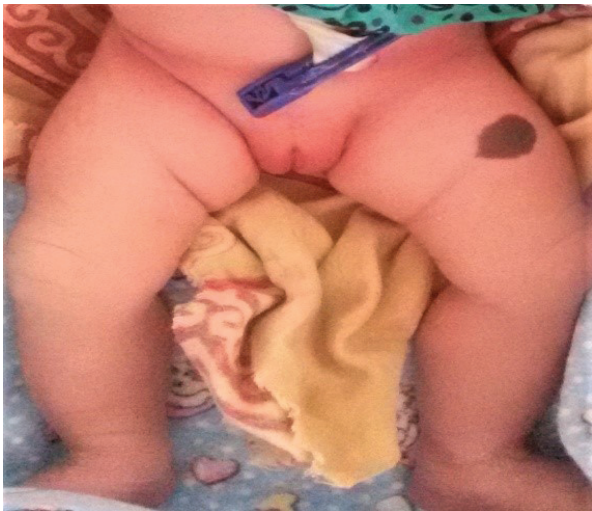
Similarly, milia was seen more in term and post term babies. Epstein pearls were seen more in post term babies and caesarian and instrumental delivery. Salmon patch was seen more in term pregnancy and primiparous mother, but it was statistically insignificant.

There were three babies with congenital melanocytic nevus, two with haemangioma and one with port wine stain. All underwent dermatological consultation.

**Fig 2:** Erythema toxicum is seen on the face, trunk, abdomen and the extremities**Fig 4:** Epstein pearl is seen on the junction between the hard and soft palate



**Fig 5:** Salmon patch is seen on the forehead



**Fig 6:** Congenital melanocytic nevus is seen on the left thigh



**Fig 7:** Pustulosis is seen on the helix and lobule of right ear

## Discussion

Among many studies conducted regarding skin manifestations in new-borns, different findings are reported in various countries. We aimed to assess the prevalence of various skin changes and their correlation with maternal and neonatal factors, if any.

The prevalence of neonatal cutaneous findings has been reported to be between 57% to 99.3% in literature<sup>2,3,4,5</sup>. In this study, 93.8% of the new-borns had one or more skin changes, similar to previous reports. Interestingly, Nobby et al. observed pathological skin changes in 41% of the new-borns<sup>6</sup>. The authors have regarded erythema toxicum and nevus as pathological entities, which is subject to discussion, but is outside the scope of this article. A study from western Nepal showed 63% of the babies presented with more than one cutaneous manifestation, which is similar to our study with 65.4% neonates having more than one skin change<sup>7</sup>.

In our study, Mongolian spot was the commonest skin change noted among new-borns, seen in 66.7% of the cases. However, their frequency showed marked racial difference in literature, varying from 25.5% to 81.5% among different populations worldwide<sup>3,8,9,10,11</sup>. In accordance with our study, higher incidence has been recorded in Asian population<sup>12</sup>. This probably owes to higher melanin density among Asians, since Mongolian spot is also a dermal melanocytosis. Mongolian spot results from entrapment of melanocytes in the dermis during their migration from the neural crest into the epidermis<sup>13</sup>.

Mongolian spots were not associated with maternal and neonatal factors assessed in our study, such as age and parity of mothers and gestational age, gender and birth weight of the new-born, as well as mode of delivery. However, Asha et al. reported positive association of Mongolian spot with maternal illness<sup>14</sup>. They proposed that maternal illness interfere with migration of melanocytes to epidermis. We have not compared this correlation in our study.

In this study, occurrence of ETN (46.6%) was consistent with previous reports<sup>4,15</sup>. We found significant association of ETN with increasing maternal age and 63.6% of the mothers were aged more than 34 years ( $p=0.018$ ). ETN was also more in primiparity, caesarean section delivery, male gender and appropriate birth weight ( $>2.5\text{kg}$ ) but not statistically significant. Ekiz et al. found ETN to be significantly associated with caesarean section delivery and multiparity<sup>16</sup>.

The relationship between maturity and ETN has been reiterated in multiple studies<sup>4,17</sup>. ETN occurs in 30-50% of full-term infants, and 5% of preterm infants<sup>18</sup>. It was postulated that an immunologically mature skin is required to produce the reaction pattern of ETN, producing more lesions in term and post-term neonates<sup>19</sup>. In our study, although ETN occurred more frequently in term (46.9%) and post term (66.7%) babies compared to preterm (41.2%), the difference was not statistically significant. Rivers et al. and Ekiz et al. did not find significant relation with maturity<sup>3,16</sup>.

Milia was observed in 44.4% of our patients, similar to previous reports<sup>1,3</sup>. However, previous study in Nepal showed lower prevalence (23.6%) of milia<sup>7</sup>. Gokdemir's et al.<sup>20</sup> showed that milia was significantly associated with female gender, however in our study, it was more in male babies (M:F=1.13:1), although not statistically significant.

Epstein pearls were present in 26.4% of the babies. However, they were observed between 18.8% to 88.7% cases in various studies<sup>2,3,7,9</sup>. This wide variation in their prevalence could be because of racial and ethnic diversity. Also, oral mucosa was not examined in some studies.

Salmon patch was seen in 11.9% of our cases, while its incidence is variable ranging from 3.15% to 59%<sup>3,20,21</sup>. Multiple studies reported higher incidence of salmon patch in females<sup>11,21,22,23,24</sup>. But it was slightly higher in males in our study. Term new-borns had significantly more lesions of salmon patch compared to preterm (12.5% VS 2%). Salmon patch was also more in new-borns with adequate birth weight (>2.5kg) ( $p$ -value=0.22). Our results coincide with previous reports stating that SP is more in term or post-term infants with heavier birth weight<sup>25,26</sup>.

Among vascular and pigmentary changes, there were three cases of congenital melanocytic nevi (CMN), two cases of haemangioma and one case of port wine stain. Approximately 1% of live births are affected with

CMN, which has 1-2 % risk of malignant transformation into melanoma<sup>27</sup>. Giant CMN (>20cm size) is rare, seen in <1:20000 live births and has risk of melanoma in 5-10% of cases<sup>28</sup>. None of the CMN observed in our study were giant. However, since there is small but significant risk of melanoma in all cases of CMN, it is essential to counsel and follow up consistently.

Haemangiomas are generally innocuous but may be life threatening when it occurs near orifices such as airway<sup>29</sup>. Port wine stains can be isolated or associated with syndromes affecting multiple organs<sup>30</sup>.

Hence it is essential that medical persons be well acquainted with these skin changes, in order to differentiate benign and pathological findings. We want to highlight that this knowledge is invaluable among health officers and medical assistants in the context of a developing country, where all new-borns are not examined by specialists. It will aid in avoidance of inadvertent treatment, as well as delineate life-threatening situations requiring further management.

## Conclusion

Skin changes in new-borns is of frequent occurrence, most of which are benign. However, it is essential to differentiate physiological, harmless entities from less common but alarming findings, that alter morbidity or quality of life. Recognition and understanding of these conditions will help reduce the parental concern and anxiety. Among the maternal and neonatal variables, erythema toxicum was associated with increased maternal age.

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