

# Dermatoses in the first 72 h of life: A clinical and statistical survey

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## ABSTRACT

**Background:** The neonatal period is generally regarded as the first 28 days of extrauterine life. Skin disorders are commonly seen in the neonatal period, most of which are transient and limited to the first days or weeks of life. In spite of being so frequent, these transient conditions usually escape dermatologist's observations, and consequently few have been studied.

**Aims:** The study was designed to identify the dermatoses in the first 72 h of life; to report the relationship among the most common dermatoses with the newborn's features; and to verify how often dermatoses are reported by the neonatologist. **Methods:** The authors carried out a cross-sectional study on newborn's dermatoses in a Brazilian public hospital, including 203 healthy neonates, until 72 h of age, with skin disorders. **Results:** Out of 34 different skin diagnosed conditions, hypertrichosis lanuginosa, Mongolian spot, sebaceous hyperplasia, epidermal hyperpigmentation, erythema toxicum, and salmon patch were the most frequent ones. The dermatoses with statistical significance were: Mongolian spot and epidermal hyperpigmentation with the non-white newborns; erythema toxicum and cutis marmorata with the white newborns; salmon patch with the female sex; physiologic desquamation with the cesarean section; acrocyanosis with the first pregnancy birth and Bohn's nodules with the vaginal delivery. **Conclusions:** Thirty-four different types of dermatological alterations were identified in the healthy newborn within 3 days of life at the Maternity School of the Federal University of Rio de Janeiro. Underreporting of dermatoses with serious medical significance shows the importance of a dermatologist in the neonatal unit of a hospital.

**Key words:** Common skin diseases, cutaneous markers, new born baby

## INTRODUCTION

The expression newborn baby (NB) defines babies who have just been born up to their 28<sup>th</sup> day of extrauterine life (World Health Organization, 1948).<sup>[1,2]</sup> The newborn skin can present with a vast range of conditions, from benign diseases to life-threatening ones. Dermatoses are quite frequent in this population, they are present from 96%<sup>[3]</sup> up to 99.3%<sup>[4]</sup> of all

newborn babies, whenever an examination of the skin, oral mucosal membrane, genitals, and phaneros (hair and nails) is performed.<sup>[4-6]</sup> The newborn cutaneous alterations, as a general rule, involute more rapidly than those of adults. Therefore, many of the conditions regarded as severe are only transitory, and can even be the result of a physiologic action.<sup>[7-9]</sup> Notwithstanding, it is important that even when transitory, these lesions are acknowledged so as not to cause worry, and so, receive the suitable treatment.<sup>[7]</sup> To make matters worse, they are hardly ever reported by neonatologists, and dermatologists demonstrate quite a low familiarity with them.

Therefore, the objectives of this study were: (i) to identify the dermatoses within the first 72 h of life; (ii) to report the relationship among the most common

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dermatoses of the newborn and mother's features; and (iii) to verify how often the skin disorders are reported in the newborn's file by the neonatologists.

## METHODS

A cross-sectional descriptive study by means of the dermatological examination on newborn babies (NBs) from 0 to 3 days of age, at the Rio de Janeiro Maternity School—UFRJ, excluding all those hospitalized in both, the Neonatal Intermediary Unit and the Neonatal Intensive Care Unit. A total of 203 newborn babies were submitted to the dermatological examination within the time span of 8 months (2004/2005). These examinations were performed by two dermatologists.

The dermatological examination was carried out once a week, in the morning, under natural sun light, including examination of the genitals, oral cavity, hair scalp, and nails. The variables analyzed were: mother and newborn (NB) skin color, number of pregnancies, type of birth delivery, and newborn sex. The skin color was classified in white and non-white, and the criteria were the color of the skin surface, the genitals and skin folds for the newborns; whereas for the mothers, it was only the skin surface color. Non-white included afro-descendants, oriental and Asian people, American Indians, and mestizos.

The diagnosis was based upon the clinical characteristics dispensing the performance of cutaneous biopsies.

The statistical analysis was performed by the Chi-square ( $\chi^2$ ) test and the criteria of significance adopted were of level 5%. Only those more frequent dermatoses (over ten cases) were submitted to the statistical testing.

## RESULTS

A total of 203 newborn babies were included in the study. A total of 118 (58.1%) were white, and 85 (41.9%) non-white. A total of 105 (51.7%) were female, and 98 male (48.3%); 190 had been born weighing 2500 g or plus (93.6%), whereas 13 (6.4%) had been born weighing less than 2500 g. Only 13 (6.4%) were premature and one post-term (0.5%). A total of 110 (54.1%) were delivered vaginally, out of them three with the use of forceps; whereas 93 (45.8%) were delivered by cesarean section (48.5%). In the case of

the mothers, 104 (51.1%) were white, and 98 non-white. A total of 114 (56.4%) were multiparae and 88 (43.6%) primiparae.

Altogether, 34 dermatological alterations were identified from all the 203 newborn babies included in the study [Table 1]. Out of them, 106 newborn babies (86.7%) presented more than one dermatosis, nevertheless, the highest number of diagnosed dermatoses in one subject was only nine and the average was 3.9 [Figures 1-8].

**Table 1: Identified dermatoses in the 203 newborn babies**

Dermatoses	n	%
Physiological hypertrichosis lanuginosa	141	69.46
Mongolian spot	103	50.74
Sebaceous hyperplasia	97	47.78
Epidermal hyperpigmentation (pigmentation of the folds, genitals, and nipples)	87	42.86
Erythema toxicum	75	36.95
Salmon patch	74	36.45
Physiologic desquamation	37	18.23
Epstein's pearls	31	15.27
Milia	28	13.79
Congenital hypertrophy of the lateral nail folds of the hallux	26	12.81
Acrocyanosis	25	12.32
Telangiectasia	22	10.84
Physiological cutis marmorata	12	5.91
Bohn's nodules	11	5.42
Vernix caseosa	9	4.43
Café au lait macules	7	3.45
Small congenital melanocytic nevi ( $\leq 1.5$ cm)	5	2.46
Intermediate congenital melanocytic nevi ( $> 1.5$ cm and $\leq 10$ cm)	3	1.48
Vascular nevi	3	1.48
Miliaria crystallina	3	1.48
Seborrheic dermatitis	3	1.48
Caput succedaneum	3	1.48
Ecchymoses by forceps delivery	2	0.99
Keratosis pilaris	2	0.99
Supernumerary nipples	2	0.99
Sucking blisters	2	0.99
Nevus sebaceous of Jadassohn	1	0.49
Nevus comedonicus	1	0.49
Miliaria rubra	1	0.49
Diaper dermatitis	1	0.49
Oral candidiasis	1	0.49
Accessory tragi	1	0.49
Adnexal polyp of the neonatal skin	2	0.99
Pilonidal sinus	1	0.49
Total	203	100



Figure 1: Physiological hypertrichosis lanuginosa



Figure 2: Mongolian spot



Figure 3: Vernix caseosa and physiological epidermal hyperpigmentation of the folds



Figure 4: Erythema toxicum



Figure 5: Salmon patch



Figure 6: Physiologic desquamation



Figure 7: Bohn's nodules



Figure 8: Adnexal polyp of the neonatal skin at the external area of the right nostril

Out of the 203 subjects, 34 (16.75%) presented with serious medical significance according to the dermatologist and 12 (5.91%) according to the neonatologist, nevertheless, both agreed in seven diagnosis (20.58%) [Table 2].

**DISCUSSIONS**

In this study, we observed a lack of correlation between the mother's and baby's skin colors. The system of skin color inheritance, defined by Mendel as polygenic, is very complex. Brazil is a country marked by great interracial marriage, thus explaining why a black

mother can have a white baby, if his father is white, or *vice versa*. Besides that, in general, all neonates are significantly lighter than adults and are able to reach adult levels of pigmentation by 6 months of age.<sup>[10]</sup>

The Mongolian spot was highly associated with the non-white skin color [Table 3]. A greater incidence has been reported in non-white,<sup>[4,11]</sup> black, and oriental babies.<sup>[12-14]</sup> As far as the localization areas are concerned, a greater incidence was on the nates and caudal lumbar regions, which is in conformity with the present medical literature.<sup>[12-16]</sup> Eleven newborn babies presented aberrant Mongolian spots on their knees, back, shoulders, dorsa of the feet and hands,<sup>[16]</sup> face, and scalp.<sup>[17]</sup> In 8 out of 11 cases, the caudal lumbar region and/or natal regions also presented lesions. Among the subjects, only two were white babies. Multiple lesions have already been described, they are generally followed by lesions in the caudal lumbar region or natal region.<sup>[14]</sup>

**Table 2: Dermatoses with serious medical significance according to the dermatologist and neonatologist assessment/evaluation**

Dermatoses	Dermatologist		Neonatologist	
	n	%	n	%
Hemangioma	0	0	5	2.46
Vascular nevi	3	1.48	0	0
Aberrant Mongolian spot	11	5.42	4	1.97
Café au lait macule	7	3.45	0	0
Small congenital melanocytic nevi (≤1.5 cm)	5	2.46	0	0
Intermediate congenital melanocytic nevi (>1.5 cm and ≤10 cm)	3	1.48	0	0
Nevus sebaceous of Jadassohn	1	0.49	0	0
Supernumerary nipples	2	0.99	1	0.49
Accessory tragi	1	0.49	1	0.49
Adnexal polyp of neonatal skin in the nostril	1	0.49	1	0.49
<b>Total</b>	<b>34</b>	<b>16.75</b>	<b>12</b>	<b>5.91</b>

Physiologic desquamation was significantly higher among newborn babies who were delivered from cesarean sections [Table 4]. There is only one observation in which type of birth and physiologic desquamation were correlated, however, among those newborn babies delivered vaginally.<sup>[18]</sup> The vernix caseosa sheds off within the first weeks of life.<sup>[19]</sup> The newborn babies who were born with greater amount of vernix likely to suffer from a major desquamation later on.

The presence of the acrocyanosis was significantly higher in newborn babies whose mothers were

Table 3: Dermatoses distribution according to the newborn's skin color and sex

Dermatoses	Skin color				P value	Sex				P value
	Non-white		White			Male		Female		
	n	%	n	%		n	%	n	%	
Physiological hypertrichosis lanuginosa	63	74.1	78	66.1	0.22	68	69.4	73	69.5	0.98
Mongolian spot	60	70.6	43	36.4	<b>&lt;0.0001</b>	47	48	56	53.3	0.44
Sebaceous hyperplasia	41	48.2	56	47.5	0.91	48	49	49	46.7	0.74
Epidermal hyperpigmentation (pigmentation of the folds, genitals and nipples)	85	100	2	1.7	<b>&lt;0.0001</b>	45	45.9	42	40	0.40
Erythema toxicum	24	28.2	51	43	<b>&lt;0.05</b>	30	30.6	45	42.9	0.07
Salmon patch	26	30.6	48	40.7	0.14	28	28.6	46	43.8	<b>&lt;0.05</b>
Physiologic desquamation	15	17.6	22	18.6	0.86	22	22.4	15	14.3	0.13
Epstein's pearls	14	16.5	17	14.4	0.69	16	16.3	15	14.3	0.69
Milia	13	15.3	15	12.7	0.60	15	15.3	13	12.3	0.55
Congenital hypertrophy of the lateral nail folds of the hallux	12	14.1	14	11.9	0.64	11	11.2	15	14.3	0.51
Acrocyanosis	10	11.8	15	12.7	0.84	10	10.2	15	14.3	0.38
Telangiectasia	6	7.1	16	13.6	0.14	12	12.2	10	9.5	0.53
Physiological cutis marmorata	1	1.2	11	9.3	<b>&lt;0.05</b>	4	4.1	8	7.6	0.29
Bohn's nodules	5	5.88	6	5.08	0.52	5	5.1	6	5.7	0.85

Note: Bold values means significant

Table 4: Dermatoses distribution according to the number of pregnancies and type of birth delivery

Dermatoses	Number of pregnancies				P value	Type of birth delivery				P value
	Primiparae		Multiparae			Cesarian seccion		Vaginal delivery		
	n	%	n	%		n	%	n	%	
Physiological hypertrichosis lanuginosa	66	75.8	75	65.2	0.10	69	74.2	70	65.4	0.18
Mongolian spot	44	50.6	58	50.4	0.99	50	53.8	52	48.6	0.47
Sebaceous hyperplasia	46	52.9	50	43.5	0.19	38	40.9	58	54.2	0.06
Epidermal hyperpigmentation (pigmentation of the folds, genitals and nipples)	36	41.4	51	44.3	0.67	38	40.9	48	44.9	0.57
Erythema toxicum	28	32.2	47	40.9	0.21	38	40.9	36	33.6	0.29
Salmon patch	30	34.5	44	38	0.58	38	40.9	36	33.6	0.29
Physiologic desquamation	15	17.2	22	19.1	0.73	23	24.7	14	13.8	<b>&lt;0.05</b>
Epstein's pearls	11	12.6	20	17.4	0.35	16	17.2	15	14	0.54
Milia	9	10.3	18	15.7	0.27	9	9.7	19	17.8	0.10
Congenital hypertrophy of the lateral nail folds of the hallux	10	11.5	16	13.9	0.61	12	12.9	14	13.1	0.97
Acrocyanosis	16	18.4	9	7.8	<b>&lt;0.05</b>	8	8.6	16	15	0.17
Telangiectasia	13	14.9	9	7.8	0.11	9	9.7	13	12.1	0.58
Physiological cutis marmorata	5	5.7	7	6.1	0.92	5	5.4	7	6.5	0.73
Bohn's nodules	5	5.7	6	5.2	0.55	1	1.1	10	9.3	<b>&lt;0.05</b>

Note: Bold values means significant

delivering for the first time [Table 4]. Out of the 24 newborns who presented acrocyanosis, 16 were delivered vaginally. As these deliveries are usually harder and slower, we might consider that the pressure suffered by the fetus while still inside the uterus and the birth canal might explain the relationship, in

which case, that has not yet been fully described.

The physiological cutis marmorata occurred a significantly amongst the white colored skin subjects [Table 3]. It might be that case in which it is easier to observe this type of lesion on lighter-colored skin

subjects. This association has not been described by other authors so far.

The Bohn's nodule and the Epstein's pearls are microkeratocysts, the first located on the palatal raphe and the second, on the alveolar ridges.<sup>[16]</sup> The available literature refers to the imprisonment of the epithelial cells in the place of fusion of the alveolar processes.<sup>[20]</sup> The Bohn's nodule presented a significant association with the vaginal deliveries [Table 4], yet, this association has not been reported.

A congenital flesh-colored, firm, pedunculated papule with a smooth surface has been observed at the external area on the right nostril, which was excised at the age of 2 years. A histopathologic examination showed the presence of vellus hair, stretched capillary, and nervous lemniscus, which is compatible with hamartoma. Despite being located on the nostril, presented a distinct evolution, as it did not detach spontaneously from the skin surface, after 1 week of life, like the adnexal polyp of the neonatal skin (APNS); it was morphologically and histologically similar to the APNS. There are previous descriptions, by the literature, of ectopic lesions located on lower eyelid, cheek, preauricular region, scapular region, axilla, arm, hypochondrium, scrotum and labia majora;<sup>[21]</sup> and of two non-ectopic cases (lesions on the breast) observed beyond the neonatal period (in a 53-day-old and in a 370-day-old infants).<sup>[22]</sup> By that, we chose to classify it as an ectopic adnexal polyp of the neonatal skin beyond the neonatal period, and we believe that the APNS should be considered one of the small tumors seen not only on the trunk, not only in neonates, but also in other sites and in infants and children. However further studies are necessary to confirm our hypothesis.

We considered dermatoses with serious medical significance, those with clinical relevance as they could be part of syndromes, be sign of extra-cutaneous diseases or cause complications depending on their location<sup>[6]</sup> [Table 2]. We believe that those five lesions diagnosed by the neonatologist as hemangioma were actually salmon patches. Aberrant Mongolian lesions were described in association with inborn errors of metabolism,<sup>[23-25]</sup> cleft lip,<sup>[26]</sup> and cutis marmorata telangiectatica congenita.<sup>[27]</sup> Café au lait spots depending on their size or multiplicity can be related to the diagnosis of genetic diseases.<sup>[28]</sup> Congenital melanocytic nevi may be precursors of cutaneous melanoma.<sup>[9]</sup> Nevus sebaceous of Jadassohn

has potential to develop a variety of benign and, less commonly, malignant neoplasms. Supernumerary nipples can be associated with nephrourethral malformations.<sup>[29]</sup> Accessory tragi can be part of syndromes involving the first branchial arch.<sup>[30]</sup> The polyp was located in the right nostril and could cause partial obstruction and aesthetical problems.

Underreporting of dermatoses with serious medical significance by a non-dermatologist has already been described.<sup>[31,32]</sup> as the dermatologist has a more specific knowledge about cutaneous diseases [Table 2].

This study enabled the characterization of the newborn babies dermatoses profile within a public institution. It is important that dermatologists are familiarized with it, so that they can recognize and treat it in the appropriate way. Neonatal dermatoses evaluation performed by both, the dermatologist and the neonatologist simultaneously, makes it possible for the achievement of a more accurate diagnosis. The neonatal unit dermatologist can make sure that a more detailed guidance is given to the mothers about physiological dermatoses that might come up in that period, sorting out doubts and excessive worries.

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