

COMMON SKIN DISORDERS IN NEWBORN INFANTS

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Skin disorders and their frequency in newborn infants have been reported by many authors. The most common skin disorders at this age are *erythema toxicum neonatorum*, perianal dermatitis, milia, miliaria, scratchmark, xeroderma, mongolian spots, *nevus flammeus*, petechia and, infrequently, *pyoderma pustulosis neonatorum* and *epidermolysis bullosa*.

For this study, 900 full-term babies were observed for frequency of skin lesions in the first four days of life.

Material and Methods

For the first four days of life, 900 full-term babies, born at the Ankara Doğumevi Hospital were examined to determine the frequency of skin lesions. The examinations were carried out under adequate lighting by one of the researchers. During their hospital stay, the babies were not washed and all of them were breast-fed; the diapers and clothing were made of the same kind of cloth.

Discussion and Results

Erythema toxicum neonatorum is a skin disorder of infants which is characterized by erythema, macules, papules, vesicles and pustules. It is seldom present at birth, occurring generally after the first few days of life.¹ Its incidence is highest on the second and third days of life and disappears at the end of the first week. There may be a recurrence one or two weeks after the first eruption. According to Mayerhofer,² the incidence of recurrence is 11 per cent, and according to Taylor, 4.5 per cent.³ It is suggested that if the cases are followed for longer periods, the recurrence rate may be higher.

Other authors have reported varying incidence of the lesions, Levy and Bagner, 4.5 per cent;⁴ Harris and Schick, 72 per cent;⁵

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Mayerhofer, 46 per cent;² Keitel, 62 per cent^a and Taylor, 31 per cent.³ Pustules were observed in only 10-12 per cent of the cases. There were no growths on cultures taken from the pustules or on smears, and eosinophils were dominant.

As demonstrated in Table 1, *erythema toxicum* occurred in 24.5 per cent of the cases on the first day, on the second day in 43 per cent, on the third day in 45.5 per cent and on the fourth day in 20 per cent. These percentages do not show the beginning day of the lesions. Since the lesions that were seen on the day persisted for several days, they were included in the cases of the second and third days. The decline of the percentage on the fourth day is partly due to the disappearance of the lesions and to the discharge of the babies from the hospital. The highest incidence of lesions was seen on the second and third days. Lesions with pustules were 10 per cent.

TABLE I
INCIDENCE OF ERYTHEMA TOXICUM IN 900 FULL-TERM BABIES
BORN AT ANKARA DOĞUMEVİ HOSPITAL

Days							
1		2		3		4	
No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%
220	24.5	384	43	409	45.5	180	20

As illustrated in Table 2, lesions are most commonly located on the trunk. Lesions first erupt on the trunk and then spread; fading starts on the trunk first.

Sometimes lesions similar to urticaria may be seen. Lesions on the face may resemble measles. Papules may develop without any relation to the macules. Although in the beginning their color is variable, between pink and red, after the completion of development within the first 24 hours, their color changes to whitish yellow. Pustules always follow papules. These are well-circumscribed, more prominent papules. Generally they are localized on the back, gluteal area and abdominal wall. Their size is variable, 2-4 mm, and their color is grayish yellow. They are not as hard as papules, are superficial and break easily. There is a white or yellow colored pus-like material contained in them. Pustules are reabsorbed within 24-48 hours. Some authors suggest that histopathologically they are folliculitis.^{7, 8} Again, there is no growth from cultures and the smears reveal eosinophils.

TABLE 2

THE LOCALIZATION OF ERYTHEMA TOXICUM NEONATORUM IN 386 FULL-TERM BABIES BORN AT ANKARA DOĞUMEVİ HOSPITAL

Face and Neck			Trunk		Extremities	
Days	No. of cases	%	No. of cases	%	No. of cases	%
1	61	15.5	68	18	56	14.5
2	172	44.5	245	63	180	46
3	136	35.5	169	43	134	35
4	37	9.5	54	14	36	9

These eruptions were first noticed by Mesopotamian doctors who theorized that this was nature's method of cleaning the baby of the mother's «dirty blood». ³ Early etiological suggestions were indigestion, colostrum, toxic agents taken with cow's milk, excretion of toxins taken in utero, and mechanical or chemical stimulation of the environment.

In their studies, Von Reuss,⁹ Von Urbach¹⁰ and Mayerhofer² revealed that there was no correlation between these eruptions and indigestion, heat, feeding or medications.

Mayerhofer believes them to be of allergic origin and that the protein passing to the fetus from the mother during pregnancy is the factor producing the allergens which sensitize the baby. Antibodies that are produced by the fetus combine with the antigens that are mentioned above. The reactions following this step are the signs of sensitivity. Von Lehdorff¹¹ emphasized that this was of allergic origin and that the baby was sensitized in utero and exposure was provided during labor and delivery.

Later, Harris,⁵ Mayerhofer² and several other authors supporting the theory of the allergic nature of the disease, pointed out that the direct correlation of blood eosinophilia and the severity of the eruptions was significant. Although today the consensus is that the origin of the disease is allergic, no one was able to demonstrate the kind of allergy.

Perianal dermatitis is generally observed in the first few days of life, localized on the perianal and gluteal areas which are in direct contact with the bowel movement. The lesions are erythematous, papular, and sometimes exudative, but they are seldom ulcerative. According to different authors, their incidence is 6.7 to 35 per cent. ^{12, 17}

In our study, no perianal dermatitis was observed on the first day, 1.8 per cent on the second day, 2.5 per cent on the third day, and 2 per cent on the fourth day.

TABLE 3

INCIDENCE OF PERIANAL DERMATITIS IN 900 FULL-TERM BABIES BORN AT ANKARA DOĞUMEVİ HOSPITAL

Days					
1		2		3	
No. of cases		No. of cases		No. of cases	
%		%		%	
0		10		27	
0		1.8		2.5	
				19	
				2	

Reactive skin, seborrheic diathesis, systemic diseases (e.g. Letterer-Sieve, acrodermatitis enteropathica, chronica and syphilis), sweat retention, contact and hygienic factors, infections, trauma, and a concentration of free H ion in the feces and urine are among the etiological factors.^{15,17,18} As this is the subject of another article, we will not go into the details in this paper.

Most authors agree that the incidence of perianal dermatitis is higher in bottle-fed babies. In our series, in which all the babies were breast-fed, the incidence was highest on the third day. The fecal pH was found to be acid in these cases. We believe the fecal pH to be the major etiologic factor in perianal dermatitis.

Milia are retention cysts due to the obstruction of the pilosebaceous follicles. Generally, they disappear with desquamation. Infrequently, they may last for months and on rare occasion may even calcify. Gordon divides milia into two classifications, bullous (superficial) and cystic (profound).¹⁹ His reported incidence in newborns was 40 per cent. Our incidence is higher because we included mild cases (see Table 2).

One of the complications in diagnosing milia is that it may be accompanied by a congenital ectodermal defect, tuberculosis, syphilis or epidermolysis bullosa. Although it is generally localized at the chin, forehead and cheeks, it may be seen on other parts of the body.²⁰ In our series, the incidence on the first day was 73 per cent, on the second day 69 per cent, on the third day 73 per cent and on the fourth day 74 per cent (Table 4).

TABLE 4
SKIN LESIONS
DAYS OBSERVED, NUMBER OF CASES, AND PERCENTAGES

Type of Lesion	Days							
	1		2		3		4	
	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent	No. of cases	Per cent
Milia	657	73	621	69	657	73	666	74
Milliaria	180	20	184	20.5	169	18.5	127	14
Scratchmark	81	9	84	9.5	99	11	81	9
Xeroderma	312	35	366	40	313	35	286	32
Mongolian spots	639	71						
Nevus flammeus	198	22						
Petechiae	76	8.5						
Pyoderma					21	2.3		
Epidermolysis Bullosa	1	0.11						

Miliaria is a mild inflammatory reaction due to the obstruction of the sweat glands. There are four types: (1) *M. crystallina*, (2) *M. rubra*, (3) *M. pustulosa* and (4) *M. profunda*.²¹ In our series, *M. crystallina* and *M. rubra* were the most common types. The incidence on the first day was 20 per cent, on the second day 20.5 per cent, on the third day 18.5 per cent and on the fourth day 14 per cent (Table 4). We relate this to the fact that Turkish babies are tightly wrapped during the newborn period except at diaper changing and feeding times.

The incidence of xeroderma was 40 per cent and most of the cases were mild. Since biopsies were not taken, there was no positive confirmation that there were no cases of congenital ichthyosis.

Mongolian spots appeared in 71 per cent of our babies. The localization was mostly at the sacral region and some were seen on the gluteal region, back and extremities. Histopathologically, they are blue nevae and disappear in time.

The incidence of Nevus flammeus was 22 per cent in our series. The most common sites were the upper eyelid, between the eyebrows and neck. They were seen occasionally on the lips. Treatment is not necessary as they fade and disappear spontaneously.

Petechiae due to birth trauma are seen quite frequently. Poley²² reported 44 per cent. In our series, it was 8.4 per cent.

Congenital varicella, acne neonatorum and congenital syphilis are rare diseases during the newborn period.^{23, 24} Varicella is readily diagnosed with smears made by the Jzanch method.²⁵ Acne neonatorum is seen during the first four weeks of life and congenital syphilis after the second week. In our series, we did not observe any of these diseases.

Epidermolysis bullosa (mentioned before) is a hereditary disease of newborn babies. The bullous lesions appear at areas which are subject to trauma. A positive Nikolsky sign, family history and the appearance of the lesions at the sites of trauma facilitate the diagnosis.^{26, 27} We saw only one case in our series.

Pyoderma pustulosis neonatorum appears on the third day and the highest incidence is on the fifth day. When pustules are present on a baby in the newborn service, an emergency situation exists. Cultures and smears should be prepared immediately and the infant isolated. In our series, the incidence was 2.3 per cent.

Dermatitis exfoliativa (Ritter's Disease) which is caused by staphylococcus and streptococcus was not observed in this series.

Summary

900 full-term newborn babies, born at the Ankara Doğumevi Hospital, were studied for the first four days of life in respect to the incidence of skin lesions occurring at this age.

Erythema toxicum neonatorum reached its highest incidence on the third day of life, 45.5 per cent, and the most common site was the trunk, 63 per cent of the cases. Perianal dermatitis was highest on the third day, 2.5 per cent. Milia was highest on the fourth day, 74 per cent. Miliaria was about the same on the first and second days, 20 per cent and 20.5 per cent, respectively, and lower on the following two days of the study. Xeroderma was at its peak on the third day, 40 per cent. Scratchmark was 11 per cent on the third day. Mongolian spots were 71 per cent and *Nevus flammeus* 22 per cent on the first day. Petechia were 8.5 per cent on the first day. We saw only one case of *epidermolysis bullosa* during this study period.

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