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Prevalence of cutaneous findings in neonates from north Bihar region

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Abstract

The neonatal period is generally regarded as the first 28 days of extra- uterine 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. Skin rashes are common in the neonate and can cause parental anxiety. Many of these are transient and physiological, but some may require additional work up to rule a more serious disorder. Hence it is important for the paediatrician as well as for the dermatologist to recognize these physiological states that can present in a normal neonate. Hence based on above findings the present study was planned for Prevalence of Cutaneous Findings in Neonates from Bihar Region.

The present study was planned in Department of Paediatrics, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India. In the present study 50 neonates were enrolled from july 2019 to December 2019. A detailed history of the neonates, age, sex, term or preterm infant, birth weight, significant maternal history and mode of delivery was elicited. Dermatological examination was carried once in the morning under bright light in the presence of my staff /guide.

The data generated from the present study concludes that the most common physiological dermatoses seen were Physiological desquamation, Mongolian spot, Milia, Erythema toxicum neonatorum. The pattern of neonatal dermatoses may vary depending on racial and geographical factors. Most of the skin lesions in newborn are self-limiting requiring no treatment. The neonatal period is one of rapid adaptation in which the skin plays an important role and fully assumes for the first time its function as a barrier and of thermoregulation. A host of aberrations varying from physiological and transient to grossly pathological are seen in the skin of neonate. Thus, recognition and understanding the neonatal dermatoses will enable the physician to allay parental concerns and initiate further evaluation and/or treatment whenever necessary.

Keywords: cutaneous findings, neonates, Bihar Region, etc

Introduction

Babies can develop many types of skin conditions shortly after they are born. A lot of these conditions last only a short time and will go away. Others, however, are birthmarks that may not be visible at birth but will stay with babies throughout their lives. Desquamation or skin peeling, is something that affects most babies in the first few days of life, especially if they are born after their due date. It is completely normal.

Cradle cap is a crusty greasy scalp rash that commonly occurs in the newborn and slightly older babies. It happens when there is a build-up of sebum (an oily substance produced by glands in the skin) that, in turn, makes skin cells stick together instead of shedding normally. It can occur on the scalp alone or with a diaper, neck, or underarm rash.

Milia are small white bumps on the baby's face. They look like whiteheads, but they are small cysts filled with sebum and keratin (a type of protein that makes up the outer layer of skin as well as a person's hair and nails). Sometimes milia are present in the gums. They are very common during the first few days of life and go away eventually without any treatment.

Miliaria is what we commonly call "prickly heat" or "heat rash." It has many different appearances: you could find tiny red bumps or little blisters filled with fluid or pus, usually on the baby's chest or back, underarms, or neck. It happens when sweat ducts on the skin become blocked. It sometimes appears after intense heat or if the baby is too bundled up. The rash eventually disappears on its own without any treatment.

Newborn acne is a very common rash for babies. It occurs mostly on the nose and forehead and looks like pimples or blackheads. Newborn acne is thought to happen when either the mother's or the baby's hormones cause the baby's glands to produce more sebum. Sometimes this acne is also caused by yeast that lives on the skin. The rash usually goes away on its own in the first few months, but treatment may be needed in some cases. Your doctor can tell you if it needs to be treated.

Erythema toxicum occurs in the first 3 to 5 days after birth. It is a rash of small red dots (although some can have a central white dot) that usually appears on the chest, back, face, and arms. This is a normal reaction in babies' skin and it goes away in a few days.

Transient pustular melanosis is a type of rash that is more common in darker-skinned babies. It appears from birth as tiny white raised bumps on a baby's neck, chest, back, or buttocks. The bumps will go away on their own, but sometimes they leave slightly darker marks on the skin.

Many babies are born with birthmarks, some of which can be worrying for parents. Some birthmarks disappear over time, while others stay remain with the child for life. Below are descriptions of the most common types of birthmarks.

A skin condition, also known as cutaneous condition, is any medical condition that affects the integumentary system—

the organ system that encloses the body and includes skin, hair, nails, and related muscle and glands [1]. The major function of this system is as a barrier against the external environment [2].

Conditions of the human integumentary system constitute a broad spectrum of diseases, also known as dermatoses, as well as many nonpathologic states (like, in certain circumstances, melanonychia and racquet nails). While only a small number of skin diseases account for most visits to the physician, thousands of skin conditions have been described. Classification of these conditions often presents many nosological challenges, since underlying causes and pathogenetics are often not known. Therefore, most current textbooks present a classification based on location (for example, conditions of the mucous membrane), morphology (chronic blistering conditions), cause (skin conditions resulting from physical factors), and so on [3].

Clinically, the diagnosis of any particular skin condition is made by gathering pertinent information regarding the presenting skin lesion(s), including the location (such as arms, head, legs), symptoms (pruritus, pain), duration (acute or chronic), arrangement (solitary, generalized, annular, linear), morphology (macules, papules, vesicles), and color (red, blue, brown, black, white, yellow). The diagnosis of many conditions often also requires a skin biopsy which yields histologic information that can be correlated with the clinical presentation and any laboratory data. The introduction of cutaneous ultrasound has allowed the detection of cutaneous tumors, inflammatory processes, nail disorders and hair diseases [4].

he skin weighs an average of 4 kg (8.8 lb), covers an area of 2 m2 (22 sq ft), and is made of three distinct layers: the epidermis, dermis, and subcutaneous tissue. The two main types of human skin are glabrous skin, the nonhairy skin on the palms and soles (also referred to as the "palmoplantar" surfaces), and hair-bearing skin. Within the latter type, hairs in structures called pilosebaceous units have a hair follicle, sebaceous gland, and associated arrector pili muscle. In the embryo, the epidermis, hair, and glands are from the ectoderm, which is chemically influenced by the underlying mesoderm that forms the dermis and subcutaneous tissues [5].

The epidermis is the most superficial layer of skin, a squamous epithelium with several strata: the stratum corneum, stratum lucidum, stratum granulosum, stratum spinosum, and stratum basale. Nourishment is provided to these layers via diffusion from the dermis, since the epidermis is without direct blood supply. The epidermis contains four cell types: keratinocytes, melanocytes, Langerhans cells, and Merkel cells. Of these, keratinocytes are the major component, constituting roughly 95% of the epidermis. This stratified squamous epithelium is maintained by cell division within the stratum basale, in which differentiating cells slowly displace outwards through the stratum spinosum to the stratum corneum, where cells are continually shed from the surface. In normal skin, the rate of production equals the rate of loss; about two weeks are needed for a cell to migrate from the basal cell layer to the top of the granular cell layer, and an additional two weeks to cross the stratum corneum [6].

The dermis is the layer of skin between the epidermis and subcutaneous tissue, and comprises two sections, the papillary dermis and the reticular dermis. The superficial papillary dermis interdigitates with the overlying rete ridges of the epidermis, between which the two layers interact through the basement membrane zone. Structural components of the dermis are collagen, elastic fibers, and ground substance also called extra fibrillar matrix. Within these components are the pilosebaceous units, arrector pili muscles, and the eccrine and apocrine glands. The dermis contains two vascular networks that run parallel to the skin surface—one superficial and one deep plexus—which are connected by vertical communicating vessels. The function of blood vessels within the dermis is fourfold: to supply nutrition, to regulate temperature, to modulate inflammation, and to participate in wound healing [7].

The subcutaneous tissue is a layer of fat between the dermis and underlying fascia. This tissue may be further divided into two components, the actual fatty layer, or panniculus adiposus, and a deeper vestigial layer of muscle, the panniculus carnosus. The main cellular component of this tissue is the adipocyte, or fat cell. The structure of this tissue is composed of septal (i.e. linear strands) and lobular compartments, which differ in microscopic appearance. Functionally, the subcutaneous fat insulates the body, absorbs trauma, and serves as a reserve energy source [8].

The physical examination of the skin and its appendages, as well as the mucous membranes, forms the cornerstone of an accurate diagnosis of cutaneous conditions. Most of these conditions present with cutaneous surface changes termed "lesions," which have more or less distinct characteristics [30]. Often proper examination will lead the physician to obtain appropriate historical information and/or laboratory tests that are able to confirm the diagnosis. Upon examination, the important clinical observations are the (1) morphology, (2) configuration, and (3) distribution of the lesion(s). With regard to morphology, the initial lesion that characterizes a condition is known as the "primary lesion," and identification of such a lesions is the most important aspect of the cutaneous examination. Over time, these primary lesions may continue to develop or be modified by regression or trauma, producing "secondary lesions." However, with that being stated, the lack of standardization of basic dermatologic terminology has been one of the principal barriers to successful communication among physicians in describing cutaneous findings [9].

The neonatal period is generally regarded as the first 28 days of extra- uterine 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. Skin rashes are common in the neonate and can cause parental anxiety. Many of these are transient and physiological, but some may require additional work up to rule a more serious disorder. Hence it is important for the paediatrician as well as for the dermatologist to recognize these physiological states that can present in a normal neonate. Hence based on above findings the present study was planned for Prevalence of Cutaneous Findings in Neonates from Bihar Region.

Methodology

The present study was planned in Department of Paediatrics, Darbhanga Medical College and Hospital, Laheriasarai, Darbhanga, Bihar, India. In the present study 50 neonates were enrolled from July 2019 to December 2019. A detailed history of the neonates, age, sex, term or preterm infant, birth weight, significant maternal history and mode of delivery was elicited. Dermatological examination was carried once in the morning under bright light in the

presence of my staff /guide.
All the patients were informed consents. The aim and the objective of the present study were conveyed to them. Approval of the institutional ethical committee was taken prior to conduct of this study.
Following was the inclusion and exclusion criteria for the present study.
Inclusion Criteria: Live births and full-term neonates within 10 days of life. Neonates with consent taken from the mother were included in the study.
Exclusion Criteria: Neonates born to mother with medical illness like Epilepsy, HIV, Syphilis, Diabetes, Hepatitis B, Endocrine disorders. Neonates born to Mothers on treatment for the above medical illness. Neonates born to Mothers with Alcohol and drugs abuse.

Results & Discussion

The skin is a complex and dynamic organ which performs numerous vital functions. The maturation process, starts at birth with the adaptation of skin to the relatively dry environment compared to in utero milieu. This adaptive flexibility results in the distinctive properties of infant skin. To deliver proper care to infant skin, it is necessary to appreciate that it is evolving with unique characteristics [10].
Maturation of skin starts during embryogenesis through intercellular and intracellular signals among different tissue layers. Barrier function development increases with gestational age and the epidermal maturation is complete by 34 weeks of intrauterine life [11].
During the skin barrier development, impaired function makes the skin susceptible to chemical damage, microbial infections and skin diseases, probably compromising the general health of the newborn. Preterm newborn, during the 1st weeks of life, has an even less developed skin barrier and therefore is even more at risk. Thus, it is exceedingly important to evaluate the risk of infections, topical agent absorption, skin barrier disruption and the risk of thermoregulatory failure.
Thus, the skin of the preterm especially with low birth weight neonates is very delicate, immature, has weaker dermoepidermal attachment which place them at higher risk of systemic dissemination from cutaneous infections.
Most of the conditions develop more rapidly than in adults and are selflimiting. Although a host of the dermatoses in neonates is a result of physiological phenomenon and transitory, its recognition and distinction from life threatening conditions is necessary to allay parent's anxiety and counsel them regarding its harmless nature. Some of the dermatoses or its variation in clinical presentation may be an earliest marker of certain life-threatening conditions eg: X-linked hypohydrotic ectodermal dysplasia present initially in the neonatal period with scaling of skin.
Neonatal period refers to the first 4 weeks of extra-uterine life [12]. The skin and appendages of the new-born present different features when compared to adults. There are many physiologic and pathologic conditions specific to neonatal skin. Therefore, an imperative knowledge of neonatal skin biology is essential for all dermatologists, the reason being that many dermatoses though appearing formidable could actually be transitory or physiologic undergoing rapid involution [13, 14]. This would thus be helpful in allaying undue anxiety for the parents and avoiding unnecessary expenditure on treatments not otherwise required. However, there are a few disorders that could also be serious needing appropriate therapy along with genetic counselling and psychologic support, the management of which is generally multi-disciplinary which the treating dermatologist should be aware about so that timely intervention could facilitate a better therapeutic outcome [15].
Cutaneous lesions are not uncommon among neonates. Several studies about the prevalence of neonatal dermatoses have been documented in various countries and racial groups. In our study all live births born in the Paediatrics ward were observed for the physiological conditions as well as birthmarks. The prevalence of neonatal dermatoses in the literature was reported between 57% and 99.3%. Out of 50 neonates in the study, 21 were males and 29 were female which correlates well with a study done by Zagne *et al*. [16] There was a female preponderance in our study as comparable to Dash *et al* 28 where the incidence of males was seen. Most of the mothers were in the age group of 20 and 29 years at the time of delivery similar to a study done by Sachdeva *et al*. [17] 72% were term babies, 18% were preterm babies and rest 10% were post term babies.
Physiological desquamation is the most common dermatological findings observed in our study. There were about 30 cases noted. It is present at birth. The incidence of superficial cutaneous desquamation resembles closely those seen in studies by Baruah *et al*. [18] Scales were easily removable, fine and thin on an erythematous base. Sites involved were trunk, extremities and ankle. It was more in term and post - term neonates. There was no sex predilection noted.
These were noted in about 28% of neonates. A similar incidence is seen in a study done by Gokdemir *et al*. [19] However the incidence of Mongolian spots in our study is quite low in comparison with other study observed in 60.2% by Sachdeva *et al* [20] & 89% by Dash *et al*. [21] Almost all cases of Mongolian spots were present on the lumbosacral region and buttocks which is comparable to a study done by Mishra *et al*. [22] Few cases had acral Mongolian spots. The colour varies from light blue to bluish green. Size was variable ranging from 5cm to 20cm. It was observed more commonly among females than males. There was no relation to maternal illness or mode of delivery similar to a study by Sachdeva *et al*. [20]

Table 1: Basic Details

Parameter	No. of Cases
Sex	
Males	21
Females	29
Gestational Age	
Preterm	8
Term	35
Post Term	7
Birth Weight	
Average	31
Low	19
Consanguinity	
Consanguineous	6
Non-Consanguineous	44
Mode of Delivery	
Normal	21
Caesarean	25
Others	4
Parity	
Primigravidae	21
Multigravidae	29

Table 2: Skin lesions

Parameter	Observed in No. of Cases
Superficial desquamation	16
Mongolian spot	13
Milia	8
Erythema toxicum neonatorum	7
Café au lait macules	4
Sebaceous gland hyperplasia	1
Neonatal acne	1
Congenital melanocytic nevi	1
Scrotal pigmentation	0
Aplasia cutis congenita	0
Nail changes	10
Hypertrichosis lanugosa	1

All dermatologists and paediatricians should be aware of neonatal dermatoses and their patterns of presentation, course, and prognosis. Our study sheds the light on knowledge about various physiological as well as pathological conditions affecting the neonates. Almost all neonates had cutaneous findings, and physiological skin manifestations were the most common of all, which are similar to findings of other studies. Various maternal and fetal factors influence the occurrence of the neonatal dermatosis as an association was observed between specific skin lesions and these factors such as gestational age, parity, history of consanguinity, type of delivery, gender, and Apgar score at the 1st and 5th min of birth. MS, neonatal erythema, lanugo, and physiological scaling are the common cutaneous features seen. Correct diagnosis of these physiological and pathological conditions in newborns and counselling of the parents relieve the anxiety, avoiding unnecessary diagnostic testing and treatment.

A host of aberrations varying from physiological and transient to grossly pathological are seen in the skin of a neonate. Dermatoses in newborns can cause a great deal of anxiety for parents. Alleviating the concerns of the parents will prevent unnecessary intervention and harm to the baby. For this, the treating physician must be aware of the common dermatoses in this population. Majority of the newborn cutaneous lesions are physiological, transient, selflimiting and require no therapy.

Conclusion

The data generated from the present study concludes that the most common physiological dermatoses seen were Physiological desquamation, Mongolian spot, Milia, Erythema toxicum neonatorum. The pattern of neonatal dermatoses may vary depending on racial and geographical factors. Most of the skin lesions in newborn are self-limiting requiring no treatment. The neonatal period is one of rapid adaptation in which the skin plays an important role and fully assumes for the first time its function as a barrier and of thermoregulation. A host of aberrations varying from physiological and transient to grossly pathological are seen in the skin of neonate. Thus, recognition and understanding the neonatal dermatoses will enable the physician to allay parental concerns and initiate further evaluation and/or treatment whenever necessary.

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