

# АНАТОМИЧЕСКИЕ И ФИЗИОЛОГИЧЕСКИЕ ХАРАКТЕРИСТИКИ СТРОЕНИЯ КОЖИ В ДЕТСКОМ ВОЗРАСТЕ

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**Аннотация:** Структура кожи ребёнка существенно отличается от кожи взрослого человека. Она составляет приблизительно одну двенадцатую от общей массы тела и в этом отношении уступает лишь поперечнополосатой мышечной и костной системам. Являясь основным интерфейсом между организмом и внешней средой, кожа выполняет функцию первой защитной барьерной линии от неблагоприятных внешних воздействий. В связи с этим любое нарушение целостности кожных покровов представляет серьёзную опасность для ребёнка. Независимо от анатомической области кожа состоит из трёх основных слоёв: эпидермиса — тонкого наружного слоя; дермы — среднего слоя; и подкожно-жировой клетчатки. Эпидермис находится в состоянии постоянного обновления и содержит меланоциты.

**Ключевые слова:** кожа детского возраста, педиатрическая кожа, анатомические особенности, физиологические характеристики, эпидермис, дерма, подкожная клетчатка, барьерная функция кожи, меланоциты.

## ANATOMICAL AND PHYSIOLOGICAL CHARACTERISTICS OF SKIN STRUCTURE IN CHILDHOOD

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**Annotation:** The structure of a child's skin is markedly different from that of an adult. It accounts for approximately one-twelfth of the total body weight and, in this respect, is exceeded only by the striated muscle and skeletal systems. As the primary interface between the body and the external environment, the skin serves as the first protective barrier against harmful external factors. Therefore, any impairment of skin integrity poses a serious risk to the infant. Regardless of anatomical location, the skin is composed of three principal layers: the epidermis, which is the thin outermost layer; the dermis, representing the middle layer; and the subcutaneous fat layer. The epidermis undergoes continuous renewal and contains melanocytes.

**Keywords:** childhood skin, pediatric skin, anatomical features, physiological characteristics, epidermis, dermis, subcutaneous tissue, skin barrier function, melanocytes.

**Introduction.** The dermis contains an extensive network of blood vessels and nerve fibers, as well as various specialized glands and skin appendages. Pediatric skin demonstrates several distinctive structural characteristics. The epidermis and the cellular components of all skin layers are more densely arranged. The stratum corneum exhibits

reduced melanin production. In early childhood, the junction between the epidermis and dermis is relatively weak, which predisposes the skin to mechanical injury. Eccrine sweat glands are structurally similar to those in adults but are present in a higher density. In contrast, apocrine glands are underdeveloped, lack secretory granules, and function irregularly during the first 2.5 years of life. Sweating typically begins between the 2nd and 5th days after birth, initially appearing on the face and subsequently on the palms and other body areas. In premature infants, sweating may start only by the end of the first month of life, often contributing to the development of hyperthermia. Sebaceous glands are relatively large and exhibit increased functional activity during the neonatal period, primarily due to the influence of maternal androgens, which may result in the appearance of milium eruptions. Then the function of the sebaceous glands decreases within a few weeks after birth and does not resume until puberty; the vascular and neural networks are immature. Vascular pattern approaches adult only as skin growth slows down, the maximum of which occurs in the first 2 months of life; myelination of skin nerves is absent, sensitive receptors are not formed. Thus, thermoregulation, carried out mainly by the eccrine glands, remains imperfect, since heat loss depends on the total blood flow in the skin and the radius of vessels that are regulated by the sympathetic nervous system. Transepidermal water loss is also reduced. A large ratio of the skin surface area to the child's body weight, low corneal cell density, and high lipid content ensure the penetration of fat-soluble substances. Against this background, the baby's bowel movements and chemicals can easily cause primary skin irritation. Cellular and humoral immunity in the early stages of life is reduced, which increases the sensitivity of children to infection by any microorganisms that penetrate the epidermal barrier. Thus, the health of the skin depends on its integrity. This means that the goal of skin care from the first days of life is to preserve the integrity of the epidermal layer. This can be achieved in several ways: by reducing the degree of hydration; by reducing friction; and by avoiding contact with irritating substances such as strong powders or soaps. The skin of a child differs in its structure from the skin of an adult. First of all, it makes up 1/12 of the total body weight, and on this basis it is surpassed only by the striated muscle and bone systems. When the body interacts with the external environment, it is the first line of defense against harmful influences. In this regard, any damage to the skin is a significant danger to the baby. Anatomical and physiological features of the skin structure in children

Contact with irritating substances can be reduced by frequent changing of diapers and light cleansing of the skin. In addition, it is useful to apply a barrier product to reduce friction and protect against irritating substances in the form of baby oil, cream, baby powder with starch, talcum powder that absorb moisture and reduce friction. Diaper dermatitis and its treatment methods from birth to the age of 2 years, children are susceptible to a number of common skin diseases — and diaper dermatitis is one of them. This condition often occurs due to irritation of the baby's skin as a result of contact with urine and feces in diapers. Although diaper dermatitis is not life-threatening, but it affects the quality of life of the child, 47% of parents name skin irritation, and in particular diaper dermatitis, as the main cause of their concern. "Diaper dermatitis" is a general term for any skin irritation that occurs in the area under the baby's diaper. In most cases, it does not pose a serious danger, but it is often a cause of discomfort and causes suffering to the child. The pain of diaper dermatitis can be compared to the pain of severe sunburn. The disease occurs everywhere

(almost all children suffer from similar" irritations " of the skin at one time or another) and accompanies almost all stressful conditions for the child. Diaper dermatitis with a high degree of probability can be expected: with teething; with the addition of infectious diseases; in the post-vaccination period; when transferring a child to artificial feeding; when introducing new food; when violating the rules for using diapers. The most common causes of diaper dermatitis are: contact with ammonia formed from urine or with bacteria contained in feces; frequent stools; rubbing the diaper against the skin; rare diaper changes; clogging the skin with tight diapers; too "rough" skin cleaning procedure; changing the diet; taking medications, especially antibiotics; acute infections. respiratory viral diseases. The basis for the prevention of diaper dermatitis is: reducing contact with irritating substances; maintaining a satisfactory degree of moisture; reducing friction; providing fresh air to the buttocks and genitals; exclusively breastfeeding in the first 6 months of life (the author's point of view); using suitable hygiene products, avoiding excessive use of creams and changing cosmetic products. In other words, to prevent diaper dermatitis, it is necessary to use a diaper (single or reusable) correctly: change the diaper as it is filled and always after the stool, choose a diaper according to size, use breathable diapers and be sure to arrange natural air baths for the child as often as possible during the day. In addition, it is important to feed naturally, harden the baby to prevent viral diseases and avoid using excessive amounts of cosmetics. Treatment depends on the severity of dermatitis, the area of the lesion, as well as the attachment of infection, which occurs very often and makes simple methods of control ineffective. So, in the first degree of severity, it is necessary to strengthen hygiene requirements, change diapers more often, increase the time of taking air baths, during which it is necessary to apply special diaper rash creams containing vitamin B5 and zinc and having a drying effect on the changed skin. In the second degree of severity, it is necessary to treat the papules with some aniline dye (gentianviolet, methylene blue), a solution of brilliant green, and leave the rest of the therapy the same. In the third degree of severity, an infection of a bacterial-fungal nature is observed. In this regard, the basis of treatment is drying — long air baths, treatment with aniline dyes on the entire surface, and after removing edema-the use of antifungal and antibacterial ointments, With a decrease in erythema and the number of papules, you can switch to the use of nourishing ointments and creams. In all cases, it is impractical to refuse disposable diapers, but it is necessary to check whether they are suitable for the baby. It may be necessary to use larger diapers to reduce the risk of friction, use diapers of the best quality, with high breathability during this period, change them more often and conduct air baths. Skin care of the baby's face at the age of 1 month the limited structure of the baby's skin, the looseness of the epidermal layer and its rapid desquamation under the influence of external stimuli often leads to the fact that by the end of 1 month of life, after lengthening the walking time, in windy, winter or rainy times, rashes appear on the face against a fuzzy background. skin irritations. Very often, these changes are mistaken for the first symptoms of atopic dermatitis, and mothers are asked to change their diet, significantly limiting the set of products, which, of course, impoverishes breast milk. However, in most cases, the cause of skin rashes at this age is a simple violation of the integrity of the skin and the rapid reproduction of opportunistic flora against this background. With proper care, usually all changes are stopped by 2-3 months of life. To reduce the spread of skin damage and prevent skin infection, all infected areas should be

treated with solutions of brilliant green or fucarcin. Before walking, a protective cream should be applied to the child's face, which retains moisture in the skin and reduces the violation of the integrity of the upper layer. After a walk, the baby should be washed or wiped with a wet cloth, which is preferable, since high water hardness also provokes dryness, peeling and violation of the integrity of the epidermis. The use of a protective cream on walks is advisable not only in the first months of life, but also during the first 3 years of life. This is especially important for children living in dry, hot or very cold climates, as well as those suffering from atopic dermatitis. In the organization of proper skin care and prevention of diaper rash, diaper dermatitis and the preservation of the child's health in general, the most important thing is the correct consultation of parents. First of all, it is necessary to examine the baby's skin, note its individual characteristics and learn how to care for it. Of course, parents are doing something right. It is necessary to praise them for the fact that they are worried about the condition of the child's skin, and clearly explain to them what are the features of the structure of the baby's skin and how it differs from the skin of adults. It is also necessary to tell them why children often have diaper rash and diaper dermatitis, rashes in open places. Be sure to emphasize how important it is to keep your baby dry in any way. Perhaps the family can't afford to use disposable diapers. In this case, it is necessary to explain that reusable diapers must be washed, they can not just be dried. It is necessary to find out what kind of detergent the family uses, and discuss how appropriate it is to use special baby washing powders or baby soap, as well as to draw the attention of parents to the importance of rinsing children's clothes well. Suggest using disposable diapers whenever possible, such as when walking or visiting the doctor. To emphasize once again that, given the technology of production of disposable diapers, it is very harmful to dry them and put them on again, because at the same time, due to a violation of absorbency, it is impossible to achieve dryness of the baby's skin. It is necessary to prove that the usual hygienic care for the skin of the buttocks and perineum is significantly different when using reusable and disposable diapers. When taking care of your skin and using disposable diapers, remember to keep your skin dry when wearing them, as the absorbency of the cream or oil in them will be reduced. In other words, it is better not to use oil at all (there may be a compress effect, which will provoke the development of diaper rash and dermatitis), but to use special diaper creams that contain a more "solid" base. Apply them in a very thin layer, not directly on the baby's skin, but squeeze the cream out of the tube first on your hands, then rub it in your hands and only then treat the baby's skin. In other words, carry out the dosage of the cream through the hands of the mother. At the same time, the cream will be absorbed quickly enough and will not remain on the baby's skin. Children with a good weight gain, with a lot of folds, having a "lymphatic" constitution, who have sweat and sebaceous glands working more, generally better use a protective cream before walking on the skin of the face, thereby preserving moisture, as well as the integrity of the upper layer of the skin. In most cases, you can not use anything at all, but only wipe the area of the baby's perineum with a wet cloth or dry it after washing. Perhaps this method is the most preferred, although not immediately accepted by parents, because their previous experience and the experience of grandmothers spoke about the need to constantly treat the child's skin with something to prevent irritation. Also, parents are



encouraged to do this by the abundance and availability of a wide variety of baby hygiene products.

However, the intensive use of any cosmetic products itself can provoke allergic reactions. Summing up the above, when using disposable diapers, it is necessary to: reduce the amount of hygiene products; it is preferable not to use anything, but only to dry the buttocks. If parents still want to use any products, then: it is better to use powder (dosed method), but not talcum powder or flour; do not use fatty oils; use special creams under diapers with dosed (through the hands of a caring family member) its application. However, if there is irritation or diaper rash, it is necessary to do air baths as often as possible, and after applying therapeutic ointments or creams, wait at least 5-10 minutes. to maximize their absorption, remove the remnants with a wet cloth and only then put on a disposable diaper. When taking care of the skin and using reusable diapers, the principles of care are somewhat different. Since the fabric absorbs quite well, the use of fatty oils is not prohibited, you can use creams. Creating a certain layer between the skin and the material, on the contrary, reduces the risk of irritation, diaper rash and dermatitis. At the same time, the powders do not create such a layer, so the friction remains high, which means that provokes skin irritation, especially when the child becomes more mobile. Thus, the main difference between skin care with disposable and reusable diapers is the impossibility of using greasy products — in the first case, and their high preventive value - in the second. In the early years of the widespread use of disposable diapers, when medical professionals themselves were not well informed about the specifics of skin care when using them and did not give enough advice to parents, cases of dermatitis increased, which some doctors regarded as a negative impact of the diapers themselves, and often based on this in their recommendations and evidence of harm to the child's health this method of skin care. When consulting parents, the following rules must be observed: examine and evaluate the condition of the baby's skin; identify possible violations of care; praise parents for what they are doing correctly; discuss with them the feasibility of changing certain elements of care; do not use "forbidding" expressions and imperative statements; do not provide too much information, give only the necessary for correction answer any questions that arise, and ask a few security questions at the end of the consultation to see if your advice is understood and accepted. Questions should be asked in an open form (for example, " How will you treat the skin?", "What will you use?", " Why is it better not to use such a tool?"), so that the parents ' answer is complete. This will allow you to be sure that your parents remember everything correctly. The result of such counseling, the principles of which can apply to any pediatric issues, will be an increase in the degree of trust in the medical professional and the desire of parents to come to him for advice. In the end, this will avoid many surprises and problems with the baby's health. The absorbency of the cream or oil when using disposable diapers is reduced, which provokes the development of dermatitis and diaper rash.

With the use of reusable diapers, emollient oils and creams help reduce the likelihood of skin irritation.

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