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Etiopathogenesis and treatment of dry skin

Up to now there is no one commonly accepted definition of dry skin. Although the term dry skin (*xerosis*) is frequently used in medicine, its definition is based on symptomatology and subjective symptoms reported by the patient. Clinically, dry skin shows the symptoms of contraction, roughness, dryness and desquamation. Ruptures in the epidermis are also present. The lesions usually occur on the erythematous background. These clinical symptoms are accompanied by subjective discomfort and itching. Dry skin is very sensitive to physical and mechanical stimuli, prone to eczema and can be easily damaged. It is not only a problem of a cosmetic nature but may be indicative of numerous diseases. Nowadays, it is a very common problem which affects 15–20% of the population (15).

Various endogenous and exogenous factors can be the cause of dry skin. Endogenous factors include genetically determined dermatological diseases such as atopic dermatitis, psoriasis and ichthyosis (12). Systemic diseases which lead to dry skin include diabetes, hypothyroidism, chronic renal failure, neoplastic diseases or cachexy. Many conditions whose symptoms include disorders of sweat or sebum secretion, such as neurological disorders or AIDS, are also characterized by the presence of dry skin. In states of dehydration induced by fever, diarrhoea, vomiting or drugs, the features of dry skin can also occur. Among exogenous factors, the causes of dry skin include vitamin deficiencies, e.g. vitamin A deficiency, topical or systemic treatment with retinoids, topical application of steroids or tars. Radiotherapy or PUVA treatment can also be the cause of dry skin. Persistent exposition to occupational factors, such as allergens, infectious factors or toxic substances contribute to occurrence of dry skin symptoms. Environmental factors comprise low humidity, low or high temperature, air-conditioning, and chronic exposition to natural and artificial ultraviolet radiation (7, 15). A frequent cause of dry skin is inappropriate care – using degreasing soaps, detergents, or hot baths. All these factors induce damages in the epidermis water barrier, which leads to increased loss of water and occurrence of dry skin features, i.e. erythema, desquamation, rough skin surface and disturbing subjective symptoms: discomfort, contraction, pruritus and burning (10, 13, 15).

The water barrier determining the appropriate hydration, moisturizing and elasticity of the skin consists of the undamaged lipid aqueous- film covering the stratum corneum, natural moisturizing factor (NMF), lipids, intercellular lipid matrix and keratinocytes of the stratum corneum layer. The lipid aqueous of the skin is formed of the secretion of the sebaceous glands, lipids coming from keratinocytes of the stratum corneum layer and exogenous compounds which are ingredients of cosmetics and medicines (2). It should be stressed that the thickness of the lipid film depends on age

– it is thicker in the neonatal and pubertal periods and decreases in childhood and older age. It is also dependent on gender, the part of the body or even annual seasons (4, 5, 14, 15). The components of the lipid film create an occlusive barrier which prevents the loss of water through the epidermis, the so-called trans-epidermal water loss (TEWL). The lipid film can be easily damaged by the use of degreasing soaps and detergents. Natural moisturizing factor is responsible for the ability of the skin to bind water, which secures its elasticity and resistance to damage. The components of NMF include amino acids, piroglutamic acid, lactates, urea, mineral salts, ammonia, uric acid, glycosamin and keratin. The source of NMF has not been fully explained, yet, although it is hypothesized that its components may be the remnants of the cellular nuclei of keratinocytes falling apart in the keratinosis process. Important components of the water barrier are hydrophilic lipids and keratin. The lipids are synthesized in the spinous and granular layers and stored in keratinosomes, i.e. Odland's lamellary bodies. Keratinosomes contain densely packed and parallelly ordered bi-membrane lipid structures built, among others of ceramides, cholesterol and fatty acids. They are components of the intercellular lipid matrix which prevent water vaporization and maintain appropriate moisture and elasticity of the skin (10, 15).

The aim of the dry skin care is to restore the damaged water barrier, which leads to restoration of the appropriate levels of moisture and grease in the epidermis. The care of dry skin requires the use of a class of substances called emollients. They are biologically neutral bases with properties facilitating restoration of the appropriate moisture and lipid composition of the stratum corneum layer (6). They take forms of various vehicles such as emulsions, creams, ointments, shampoos or cleansing bars (8). Their maximum action time is up to 6 hours, therefore they must be applied at least twice daily to obtain a clinically relevant improvement (13, 15).

For everyday hygienic care of dry and sensitive skin, the use of traditional soaps is contraindicated since they are characterized by alkaline pH. Being a substance active on the surface of the skin, soap removes not only dirt but also damages the acidic lipid film of the skin. As a consequence, disturbed lipid balance renders the protective layer more permeable and the skin loses water too rapidly and is not able to fulfil its protective barrier functions. Therefore, it is necessary to use only those washing products which have acidic pH and do not affect the natural hydro-lipid barrier of the skin. Cleansing bars are available which are efficient in skin cleansing and due to their composition, including glycerine, paraffin and other carefully matched ingredients, do not disturb the skin hydro-lipid balance.

Hot baths, particularly when water is hard and strongly chlorinated, can also cause the sensation of discomfort due to excessive skin dryness (5, 7, 15). Taking a bath may have a cooling effect on the skin only if emollients in the form of washing emulsions are added to the water. The bath temperature should not exceed 36°C since lukewarm water exerts positive effects on the process of skin greasing and relieves the sensation of itching. The indicated bath time is 15–20 minutes. After the bath, the skin should be dried delicately with a soft towel. Intensive rubbing results in removal of the lipid cover created during the bath. A necessary care procedure which should be done within 3–5 minutes after the bath is to apply an emollient in the cream or ointment vehicle onto wet skin. These substances penetrate into the stratum corneum of the epidermis where they bind water. Owing to their composition including ceramides, squalen and other ingredients, they additionally strengthen and rebuild the structure of the lipid layer.

Contemporary dermocosmetics designed for dry and sensitive skin care do not contain preservatives, artificial flavours or fragrance factors (9). They are produced on the basis of thermal water, rich in silica and calcium ions. Due to this composition they relieve the sensation of skin contraction and burning and also show anti-inflammatory effects (1, 5, 11). Avoiding water-alcohol

cosmetics, hard and chlorine water and various detergents is essential for the care of dry and sensitive skin. Staying in air-conditioned rooms, rapid environmental temperature changes, harsh sun, wind, tanning facilities are serious hazards for dry and sensitive skin since all of them increase its dryness (10, 11, 15). In autumn and winter periods careful protection should be secured for the uncovered parts of the body, such as the face or hands. Hypoallergic fat creams are then indicated for use since they nourish the skin and protect it from the detrimental effects of the external environment.

Besides care procedures, the degree of skin hydration depends on the diet and the degree of hydration of the whole organism. The indicated diet should be rich in vitamins A, E, B, mineral salts and unsaturated fatty acids (10, 15). Vitamin A stimulates reconstruction and desquamation of the epidermis and regulates the amount of the secreted sebum. Vitamin E exerts effects on metabolism of the connective tissue, combats free radicals and in this way inhibits skin aging processes. Insufficient amount of the group B vitamins in the diet can be the cause of inflammatory processes and hyperkeratosis. People in whom the problem of dry skin occurred should drink at least 2 litres of liquids per day, preferably in the form of flat mineral water. Alcohol, coffee, tea and spicy foods should be limited in the diet. Smoke from cigarettes significantly accelerates the process of wrinkles formation to which dry skin is particularly prone. Therefore, people with dry and sensitive skin should give up smoking (7).

Dry skin requires systematic and complex care, whose aim is to restore the damaged epidermal barrier. The appropriate function of the skin is possible only if the stratum corneum contains adequate amounts of water and lipids. Regular application of moisturisers and substances supplementing lipid deficiencies as well as avoiding irritating factors is the basis for the dry and sensitive skin care.

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SUMMARY

Dry skin occurs not only in people with dermatological disorders. This problem frequently appears as a result of systemic diseases or as an effect of a range of environmental, infectious, toxic or allergic factors. Up to day there has been no one commonly accepted definition of dry skin. This condition is defined mainly on symptomatology and subjective symptoms. The therapeutic treatment aims at restoring the function of the protective barrier in the skin and relieving the patient's discomfort.

Etiopatogeneza i leczenie suchej skóry

Sucha skóra występuje nie tylko u osób ze schorzeniami dermatologicznymi. Często problem ten jest następstwem chorób ogólnoustrojowych, a także działania szeregu czynników środowiskowych, infekcyjnych, toksycznych czy alergenów. Do chwili obecnej nie ma obowiązującej definicji suchej skóry. Termin ten opiera się głównie na symptomatologii i objawach podmiotowych. Postępowanie terapeutyczne ma na celu przywrócenie skórze funkcji bariery ochronnej oraz zmniejszenie dyskomfortu pacjenta.