

Allergic skin diseases in the hot climate

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SUMMARY

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Skin diseases are counted most frequent ailments in the individuals representing the moderate climate who stay in the tropics. Among dermatoses treated in the tropical climate allergic diseases tend to prevail, which can be attributed to defect or non-compliance with the basic prophylactic principles. Exposure to factors of different nature: physical (microinjuries, high temperature and humidity of air, solar radiation), chemical (contact allergic reactions), and biological (microbes, insect bites and stings) give a reason for a number of diseases such as contact eczema, photodermatoses or side effects of medicines. Apart from cosmopolitan health problems can appear allergic symptoms in the process of tropical infectious diseases such as schistosomiasis and filariasis.

Key words: allergic skin diseases, hot climate

Risk factors of allergic skin diseases morbidity in the tropics:

- chemical factors (effect of chemical substances – contact allergens) [1, 2],
- physical factors (microinjuries, high temperature and humidity of air, solar radiation, rainfalls) [3, 4],
- biological factors (bacteria, viruses, fungi, parasites; insects bites and stings),
- disturbance of immune deficiency,
- metabolic disease, peripheral circulatory failure,
- side effects of medicines,
- inappropriate dress, shoes,
- bad social conditions, hygiene status,
- inappropriate nutrition, food allergens [5, 6].

Dissemination of allergic dermatoses in the tropics:

Direct contact:

- abiotic substance – soil, water, eatables,

STRESZCZENIE

Alergiczne choroby skóry w gorącej strefie klimatycznej

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Choroby skóry należą do najczęstszych schorzeń występujących wśród przedstawicieli klimatu umiarkowanego przebywających w tropiku. Wśród dermatoz leczonych w strefie klimatu tropikalnego dominują choroby alergiczne, co jest spowodowane głównie brakiem przestrzegania podstawowych zasad profilaktyki. Ekspozycja na czynniki fizyczne (drobne mikrourazy, wysoka temperatura i wilgotność powietrza, promieniowanie słoneczne), czynniki chemiczne (oddziaływanie alergenów kontaktowych) oraz czynniki biologiczne (ukąszenia owadów) są przyczyną powstawania wielu schorzeń, takich jak wyprysk kontaktowy, fotodermatozy czy objawy niepożądane po stosowaniu leków. Oprócz tego mogą wystąpić objawy alergiczne w przebiegu tropikalnych chorób infekcyjnych, do których należą między innymi schistosomoza i filariozy.

Słowa kluczowe: alergiczne choroby skóry, klimat gorący

- sick or carrier – people, animals.
- Indirect contact:
 - vector of infection, indirect host [7, 8].
- Division** of allergic skin diseases in the tropics:
 - Cosmopolitan allergic dermatoses in the hot climate:
 - pruritus,
 - urticaria,
 - seborrhoeic eczema,
 - contact eczema,
 - dyshidrotic eczema,
 - side effects of medicines,
 - phototoxic and photoallergic reactions.
 - Tropical allergic dermatoses:
 - schistosomiasis: cercarial dermatitis.
 - filariases: loiasis, onchocerciasis.
 - larva migrans.
 - myiases.
 - papular urticaria [9, 10, 11].

PRURITUS IN THE TROPICS

Etiology:

- Parasitic diseases:
 - filariases (loiasis, onchocerciasis),
 - helminthiases (strongyloidiasis, ancylostomiasis),
 - cosmopolitan parasitoses (scabies, enterobiasis).
- AIDS.
- Side effects of medicines (chloroquine, quinine).
- Climatic conditions:
 - dry season (excessive corneum desiccation),
 - rainy season (high humidity, sweat retention) [12].

URTICARIA IN THE TROPICS

Etiology:

- Helminthiases (strongyloidiasis, ascariasis).
- Filariases.
- Medicines.
- Food.
- Mosquitos, sand flies, phytotoxins (contact urticaria) [13].

SEBORRHOEIC ECZEMA

Etiology:

- Climatic conditions (high temperature and humidity of air).
- Chemical agents (irritant effect).
- Incorrect external treatment.
- Inappropriate application of cosmetics.

Seborrhoeic eczema appears more often among people of black race than in the population of white men. This kind of eczema is one of the most often health problems among black infants in first three months of life [10].

CONTACT ECZEMA

Etiology:

- External treatment (sulfonamides, penicillin).
- Cosmetics (hydroquinone and hydrargyrum - components for bleaching the skin).
- Chemical agents in the household (washing powder, washing-up liquid).
- Insecticides.
- Vegetal allergens (*rhus toxicodendron*, seaweeds).
- Exotic trees (ebony, palisander, mahogany).
- Synthetic clothes and shoes.

Contact eczema occurs rarely among people of the black race (bigger black skin immunity to toxic and irritant substances) [12].

DYSHIDROTIC ECZEMA

Etiology:

- Medicines made increase of sweatiness.
 - Inappropriate using of cosmetics (diaphoresis with simultaneous hindrance to elimination of sweat).
 - Co-existent diseases.
- Dyshidrotic eczema occurs very often in the tropics, aside from the race. It appears especially among representatives of temperate climate after arrival to the hot, humid climate zone [1].

SIDE EFFECTS OF MEDICINES

Etiology:

lack of pharmaceutical supervision of medicines which were taken out of western countries markets because of causing side effects, but they are accessible in under-developed countries (drugstores sell medicines without prescription).

Drug allergens cause all types of hypersensitivity according to Gell & Coombs.

Allergic reactions can be a reason of following health problems:

- urticaria and Quincke oedema,
- erythematous and maculate exanthema,
- purpura,
- multiform erythema, Stevens-Johnson syndrome, Lyell syndrome,
- fixed erythema,
- bullous and vegetative reactions,
- phototoxic and photoallergic reactions [14, 15].

PHOTOTOXIC REACTIONS

They appear as a result of activity of various substances, e.g. medicines (tetracyclines, sulfonamides), cosmetics (perfumes), which increase the skin reaction for ultraviolet radiation (mainly UVA) alongside appropriate concentration of toxic substance mentioned above. Reactions are limited to the place of activity of phototoxic substance (when compound has volatile form, lesions can broaden).

Pathological syndromes occur after first contact, and vanish, when phototoxic factor is removed. Among people of the black race these reactions belong to rarity [10, 16].

PHOTOALLERGIC REACTIONS

Immunological reaction of early type (light urticaria) as well as delayed type (polymorphic light eruptions, actinic cheilitis) is caused by working of photoallergic substances (medicines, cosmetics). Lesions are gen

eralized, mainly on the uncovered parts of the body. Amid people of the black race this kind of reaction is uncommon [14, 17].

SCHISTOSOMIASIS – CERCARIAL DERMATITIS

Parasitic disease caused by bilharzia of the genus *Schistosoma* living within mesenteric or vesical veins of the host. In endemic areas of schistosomiasis live 500-700 millions of the world population, 200 millions are afflicted, mainly in African and Asian continent. Human infection follows by active penetration the skin during bath in infected water. Cercarians through blood vessels, heart, lungs (in time of 48 hours) reach portal vein. In the human body parasites achieve full age (life-span 2-18 years).

Dermatological symptoms:

- itch, papular exanthema for a few days, as a result of skin penetration by cercarians (skin stage of disease),
- urticaria, face swelling, during pubescence of parasite in the portal vein system (toxico-allergic stage of disease) [18, 19].

LOIASIS

Filarial disease caused by roundworm parasitize in human tissues (adult worms – filariae in the subcutaneous connective tissue; larvae – microfilariae in the blood). Loiasis occurs in Equatorial Africa (from 3 to 13 millions of sick people).

Way of infection: healthy man is infected by sting of bloodsucker, insect of the genus *Chrysops* (intermediate host). Microfilariae sucked with infected human blood pass stages of evolution in the vector organism.

- Dermatological symptoms: itch, especially in the region of face and hands; the appearance of noticeable funiculus moving under skin with the speed 1 cm per minute; swelling, mainly face and hands (restricted, periodic, from a few hours to a few days),
- Ophthalmological symptoms: passage of filarial nematode under conjunctiva causing photophobia, feeling of foreign matter, epiphora) [11, 20].

ONCHOCERCIASIS

Parasitic disease caused by filarial worm belonging to the class *Nematoda* parasitize in human tissues (adult worms – in the skin; larvae – microfilariae in the skin and eye). Onchocerciasis occurs in Equatorial Africa, South America, Middle East (about 18 millions of sick people). Vector of infection are flies of the genus *Simulium*.

- Dermatological symptoms: itch, lichenisation, pachyderma and exuviation (“skin of elephant”); subcutaneous papules and subcutaneous nodules, s.c. onchocercoma (contained death or alive filariae) on the torso, buttocks and limbs; skin depigmentation; loose folds of skin in the inguinal areas (“hanging groins”) as a result of inflammatory and fibrosis of inguinal lymphatic glands, enlargement of inguinal lymphatic glands, elephantiasis of scrotum.
- Ophthalmological symptoms: blindness (microfilariae penetrate from the skin to conjunctiva, cornea, and anterior chamber or vitreous body) [6, 21].

LARVA MIGRANS

Penetrating skin lesion caused by roving of larvae of animal nematodes, mainly hookworms in the skin (*Ancylostoma sp.*, *Strongyloides sp.*).

Larva migrans concerns mostly children, especially walking barefoot on the ground. Symptoms:

- larva during the ramble causes red and itchy dermal funicles,
- length of drilled corridors amounts even over 10 cm, in the end of corridor is visible papula or vesicle (site of parasite occurrence),
- larva in the human skin doesn't mature, it dies after several days-weeks [9, 22].

MYIASIS

Group of diseases caused by parasitic fly larvae feeding on the host's necrotic or living tissue. Infestation of the body happens usually through a wound or other opening. Larvae penetrate the skin and develop in the animal or human tissues.

According to dermatological point of view it is allowed the following division of illness:

- myiasis with lesions similar to larva migrans,
- myiasis perforated the skin to suck blood, caused local inflammatory reaction,
- myiasis caused lesion similar to furunculus,
- myiasis with larvae multiplied in wounds, ulcers, caused destruction of tissues [11, 17].

PAPULAR URTICARIA

Chronic papular exanthema as a result of hypersensitivity for insects bites (in the tropics mainly mosquitoes and flies) [12, 14].

CONCLUSIONS

1. Skin diseases belong to the frequent health problems occurring amid representatives of temperate climate stayed in the tropics.

2. Allergic skin illnesses are dominated among dermatoses treated in the hot climate zone.
3. The high incidence of allergic dermatoses usually is a result of lack of basic prophylactic rules enforcement.
4. Contact eczema, photodermatoses, and side effects of medicines are leading skin problems among allergids.

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