

ORIGIN AND ETIOLOGY OF DERMATITIS

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Annotation: Dermatitis, an inflammation of the skin usually characterized by redness, swelling, blister formation, and oozing and almost always by itching. The term eczema, which formerly referred to the blistered, oozing state of inflamed skin, has by common usage come to have the same meaning as dermatitis.

Key words: Dermatitis, inflammation, reaction.

Dermatitis may be classified into several types. Contact dermatitis results from contact of the skin with an irritating substance or a substance to which the person is allergic. The inflammation can result from contact with a strong acid or alkali or some other chemical, or it can result from contact with innocuous substances (e.g., cosmetics, soap, clothing) which are not primarily irritating in themselves but which produce a reaction in a person who has been sensitized by repeated exposure to them. The most common cause of contact dermatitis in the United States and some other countries is poison ivy. Many other plants can cause the condition. Chemical compounds that may cause contact dermatitis include such metals as nickel and chromium, certain aniline dyes, and many types of drugs. The prevention of contact dermatitis rests upon the identification of the particular irritant and subsequent avoidance of it.

Atopic dermatitis, the most common type of dermatitis, typically begins in infancy and can last into adulthood. It is characterized by redness, thickening, and scaling of the skin in patches, typically on the face, neck, hands, feet, in the crook of the elbow, or behind the knee. The skin becomes extremely dry, and this leads to itching. In adulthood the severity of skin symptoms tends to decrease; however, about three-quarters of affected individuals eventually develop hay fever or asthma.

Scientists have identified abnormal levels of immune substances in people affected by atopic dermatitis, indicating that immune dysfunction plays an important role, likely triggering allergic reactions to normally innocuous substances. For example, in some affected people, chemical compounds associated with certain foods, plants, and animals may stimulate an inappropriate immune reaction that gives rise not only to skin symptoms but also to congestion, wheezing, and gastrointestinal upset. Research also has shown that individuals affected by both atopic dermatitis and food allergy have structural and molecular differences in the outer layers of their skin; individuals affected only by atopic dermatitis do not show these differences. A dysfunctional skin barrier is suspected of enabling food allergens to more easily irritate immune cells, contributing to food allergy. Irritants in tobacco smoke, detergents, industrial chemicals, and certain fabrics can also aggravate skin symptoms. The underlying cause of atopic dermatitis is not known, but it tends to run in families whose members have hay fever and asthma.

Stasis dermatitis is a skin inflammation affecting the ankles and lower legs. The condition is caused by chronic poor blood flow in the veins and particularly by varicose veins. The poor blood flow brings about swelling and a progressively more acute irritation of the skin that may lead to ulceration. Stasis dermatitis can be prevented if steps are taken early to improve the blood circulation of the legs, such as wearing supportive stockings or having surgery performed on the varicose veins.

Seborrheic dermatitis is a scaly skin condition that most frequently affects the scalp, dandruff being the common name for the skin particles that scale off the scalp. The condition generally involves body areas that are rich in sebaceous, or oil-secreting, glands, and it can also affect the forehead and eyebrows, the middle of the face, the area behind the ears, and the armpits. Most individuals with seborrheic dermatitis tend to have oily skin. During infancy, seborrheic dermatitis may commonly manifest itself as a yellowish scaling of part of the scalp, a condition referred to as cradle cap.

Neurodermatitis refers to a skin inflammation that is apparently caused by the patient's own repeated and chronic scratching of an itchy area of skin.

Environmental influences and treatment

Research has indicated that environmental factors significantly influence the overall risk of dermatitis. For example, children who are breast-fed for four months or longer have a reduced risk of dermatitis. In addition, compounds called omega-3 fatty acids, which have anti-inflammatory properties, have become an important area of dermatitis research. Skin creams containing omega-3 fatty acids can lessen the severity of skin symptoms and, in some cases, prevent dermatitis. Studies comparing the early diets of children with and without dermatitis have indicated that incorporating fish into a child's diet before nine months of age reduces the risk of dermatitis by 25 percent. Scientists suspect that this reduction is mediated by omega-3 fatty acids, which are present in large amounts in some fish.

The general goals of treatment for dermatitis involve reducing symptoms, healing the skin, and preventing exposure to irritants and allergens that cause outbreaks. Special creams and lotions that contain anti-inflammatory compounds may be used to soften and soothe the skin, and topical corticosteroids may be applied to the skin to relieve itching. However, corticosteroid-containing medications can cause skin-thinning, dilation of superficial blood vessels that leads to unsightly red spots on the skin, and abnormal skin pigmentation. There is also a risk of systemic absorption of corticosteroids, which can lead to disruption of normal physiological steroid production. Topical immunomodulators (TIMs), which are steroid-free skin medications, have been developed. These agents work by inhibiting the activation of immune substances. However, due to their potentially dangerous side effects (e.g., lymphoma), TIMs are considered second-line treatments for dermatitis. Other therapies used for dermatitis include antihistamines, phototherapy, which uses ultraviolet radiation to suppress immune reactions, and photochemotherapy, which combines phototherapy with the administration of a light-sensitizing compound such as psoralen. Itching, a stimulation of free nerve endings, usually at the junction of the dermis and epidermis of the skin, that evokes a desire to scratch. It has been suggested that an itch is a subthreshold sensation of pain; however, although both itch and pain sensations share common nerve pathways, they are generally considered distinct sensory types. Itching evokes a range of sensations, from a tickling that is easily relieved to pathologic itching, which generally indicates a dermatologic or systemic disease.

The release of histamine from cells in the epidermis is usually considered to incite most sensations of itching. Scratching may temporarily relieve itching by interrupting the rhythm of nerve impulses or by inflicting transitory damage to the nerves. Persistent scratching produces redness, papules, and crusting of the skin.

Itching associated with skin lesions (such as vesicles and papules) generally indicates a dermatologic disease. Generalized itching without skin lesions can occur in systemic diseases such as those that occur in metabolic and endocrine conditions, malignant cancers, drug reactions, and renal, blood, and liver diseases. Excessive drying of the skin caused by pregnancy, old age, or weather often produces itching. A psychological cause for itching is considered only after all other possibilities have been sufficiently excluded.

No generally accepted therapy exists for the relief of itching, although many have been suggested. Topical anesthetics and other drugs usually have temporary or minor effects. Emollients, applied and blotted dry, may be helpful when applied to wet skin. Antihistamines may also be helpful. At present the choice of therapy usually depends on the underlying cause of the itching, and the focus is primarily on curing the underlying disease rather than the symptom.

Cellulitis, bacterial infection of the skin. Cellulitis can be caused by any bacteria that enters a superficial skin wound, but often they are strains of *Staphylococcus* or *Streptococcus*. The condition commonly affects the lower extremities but can occur anywhere on the body where the skin has broken. If left untreated, infection can spread to the bloodstream and lymph nodes, leading to a potentially life-threatening situation. The possibility for cellulitis to become a severe condition escalated following the emergence of methicillin-resistant *Staphylococcus aureus* (MRSA) bacteria. Cellulitis is not usually contagious, although skin-to-skin open-wound contact could spread infection.

Risk factors

Several risk factors have been identified that increase the likelihood of developing cellulitis. Persons with weakened immune systems, including as a result of immunosuppression from corticosteroids or other medications, are at increased risk. Excess weight, diabetes mellitus, and a history of peripheral vascular disease are also risk factors. Skin conditions that increase risk include athlete's foot, eczema, psoriasis, impetigo, herpes zoster (shingles), and chickenpox. Breaks in the skin from other causes also increase risk, including scrapes, burns, ulcers, surgical incisions, tattoos, piercings, injections, and insect, spider, or other animal bites. People with chronic swelling of limbs or a previous cellulitis diagnosis are also at increased risk. Cellulitis recurs in about one-third of patients.

The primary symptom of cellulitis is a change in skin appearance. This can include erythema (redness), edema (swelling), blistering, spotting, bruising, discoloration, or a bumpy texture. Skin may also look tight or glossy. These symptoms may be accompanied by pain, tenderness, and warmth. Usually only the skin on one side of the body is affected. The infection may also cause fever and be accompanied by chills, headache, nausea, vomiting, fatigue, or weakness. Because cellulitis causes swelling, it may be difficult to walk or to move affected body parts. Muscle aches and joint stiffness may also occur, and the lymph nodes near the affected region may be swollen. The diagnosis of cellulitis is based largely on physical examination but may also involve evaluation of a blood culture and a complete blood count to check for infection. A skin test and bacterial culture may also be performed to identify bacterial type, which can inform treatment decisions. Immediate medical attention is required for spreading skin redness, especially in the presence of swelling, tenderness, and fever. Treatment consists primarily of antibiotic therapy, which typically includes an oral antibiotic and sometimes a topical antibiotic for the wound. In more serious cases, an antibiotic may be given intravenously. Pain medications, such as nonsteroidal anti-inflammatory drugs, may help relieve symptoms. With treatment,

cellulitis typically resolves after 7 to 10 days. If left untreated, severe cases of cellulitis may result in amputation.

Cellulitis can be prevented through hygiene, including immediate and proper cleaning and care of wounds. An antibiotic ointment or cream may be used to protect wounds. Patients who have previously experienced cellulitis and are at high risk of wounds may be prescribed low-dose long-term preventive antibiotics.

Complications of cellulitis are uncommon but can be life-threatening. Untreated cellulitis can lead to endocarditis (inflammation of the heart), osteomyelitis (bone infection), suppurative or septic arthritis (joint infection), thrombophlebitis (swelling of the veins), lymphangitis (inflammation of lymph vessels), meningitis (inflammation of the membranes covering the brain and spinal cord), gangrene, toxic shock syndrome, or sepsis. In severe cases, the infection can spread to the fascia, causing necrotizing fasciitis, which requires urgent medical attention.

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