

Ulcer of lower leg

Ulcer of lower leg (lat. *ulcus cruris*) is a loss of skin substance reaching various depths into the subcutaneous tissues. It is a chronic wound with a healing time of more than 6 weeks. It arises as a result of severe trophic changes in tissue damaged by a previous disease, most often vascular. It occurs mainly in older people. It is a polyetiological disease.^[1]

Etiopathogenesis

In most cases, it arises as a result of serious trophic changes - in up to 85% of venous origin (so-called venous ulceration), in 10% of arterial origin, the remaining 5% has another cause.

External causes: physical, chemical, infectious, artefacts.^[1]

Internal causes: **venous, arterial, lymphatic, hematogenous, coagulation, metabolic, neuropathic diseases, vasculitis, tumors, mixed disorders.**

Venous ulceration

- Phlebothrombosis:
 - after its healing, partial or complete recanalization of the affected vein may occur, but usually with destruction and subsequent insufficiency of the valves in the deep and connecting venous system
 - the consequence of these macrocirculation disorders is blood stasis and the gradual development of venous hypertension, which has a secondary response in the area of microcirculation - increased capillary permeability, loss of plasma proteins and formation of a fibrin pericapillary cuff
 - these changes, together with rheological disorders, lead to trophic changes in tissues and the formation of a so-called postthrombotic leg ulcer,
 - ulcerations tend to be deep, extensive, often circular, with irregular, often undermined edges, have a pronounced exudative character, a coated base and are accompanied by extensive edema
- Primary varicosity:
 - leg ulcers are a terminal manifestation of chronic venous insufficiency caused by insufficiency of venous valves in the deep venous system, connecting veins, or in the superficial venous system, or a combination of all the preceding disorders.
 - ulcerations are smaller, have a shallow base and smooth edges;
 - most often located on the inner side of the distal third of the lower leg in the place of the so-called Cockett perforators, but also above other places in the area of the lower leg.^[1]



Ulcus cruris venosum

Arterial ulceration

They are caused by partial or complete vascular occlusion, the causes of which are most often arteriosclerotic changes. Arterial occlusion is first manifested by black-brown necrosis on the skin in the affected area, and after its detachment, ulceration with yellow, sticky or gooey coatings appears.

Ulcerations are often circular in shape and, in addition to localization on the front, medial and lateral sides of the lower legs, they also occur on the insteps, toes and heels, and are quite painful, especially when the legs are in a horizontal position.

Examination

- Examination of the venous and arterial system of the lower limbs - sonography (Doppler, Doppler Duplex);
- examination of the functional fitness of the muscular venous pump - digital photoplethysmography (D-PPG);
- in unclear cases - phlebography, isotope phlebography, arteriography;
- microbiological, eventually mycological examination.^[1]

Healing

1. exsudative phase

- The body's defense reaction to various toxins;
- vasodilatation, increased vascular permeability and the action of chemotactic factors enable the migration of neutrophils and macrophages to the wound site, where they phagocytose cellular detritus, foreign material and pathogens. At the same time, they secrete inflammatory mediators, cytokines, growth factors and other chemotactic factors that activate the cells needed for healing. They also release proteolytic enzymes that dissolve damaged and devitalized tissue.^[1]

2. proliferative phase

- Formation of new granulation tissue, granulation tissue interwoven with blood vessels;
- cytokines and growth factors stimulate fibroblasts and vascular endothelial cells.^[1]

3. reepithalization phase

- Migration, mitotic division and differentiation of cells with the support of growth factors and maturation of collagen fibers;
- cells of the basal layer migrate to the surface of the skin and at the same time approach by amoebic movement from the edges of the wound to its center;
- finally the cells mature, the epidermis is finally rebuilt with individual layers and functions. Parallel to this process, structural changes occur in the joint and the original wound turns into healed, scarred tissue.^[1]



Ulcer covered by fibrin

In chronic wounds, which include leg ulcers, the healing process is impaired by a number of local and general factors. Therefore, the individual phases are prolonged, especially the exudative and granulation phases.

Complications

- Contact allergy from the amount of materials applied externally
- erysipiel.

Treatment

- Local and systemic treatment (venopharmaceuticals, vasodilators, analgesics and enzyme preparations);
- removal of all necrotic, fibrin and bacterial coatings or wound debridement – mechanical, autolytic, chemical, enzymatic;
- stimulation of granulation and epithelization – ointment therapy and moist compresses;
- external compression for ulcers of venous and lymphatic etiology - short-stretch bandages.^[2]



Ulcer cruris - healing with granulation tissue

Links

References

1. POSPÍŠILOVÁ, A. Bércový vřed. *Dermatologie pro praxi* [online]. 2008, roč. 2, vol. 2, s. 79-84, dostupné také z <<http://solen.cz/pdfs/der/2008/02/08.pdf>>.
2. BARUČÁKOVÁ, L a Y VANTUCHOVÁ. aKombinovaná léčba bércových ulcerac. *Interní medicína* [online]. 2010, roč. 12, vol. 6, s. 312-315, dostupné také z <<http://solen.cz/pdfs/int/2010/06/05.pdf>>.

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