Guidelines

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S1 guideline: Differential diagnosis of acute and chronic redness of the lower legs

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Responsible Professional Societies: German Dermatological Society (Deutsche Dermatologische Gesellschaft, DDG), Professional Society of German Dermatologists (Berufsverband der Deutschen Dermatologen, BVDD), German Society for Wound Healing and Wound Treatment (Deutsche Gesellschaft für Wundheilung und Wundbehandlung e. V., DGfW), Phlebology Working Group within the German Society for Phlebology (AG Phlebologie in der Dermatologie der Deutschen Gesellschaft für Phlebologie e.V., DGP), German Society for Lymphology (Deutsche Gesellschaft für Lymphologie e.V., DGL), German Contact Allergy Group (Deutsche Kontaktallergie-Gruppe e.V., DKG) within the German Dermatological Society DDG

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Summary

Acute or chronic redness of the lower leg is a frequent reason for visits to clinics and practices. The differential diagnosis is often challenging. The aim of this guideline is to define criteria and procedures for the differential diagnosis of acute or chronic, unilateral or bilateral redness of the lower leg. Finding the correct diagnosis is essential for selecting an appropriate treatment and can help to reduce the inappropriate use of antibiotics. The guideline committee identified the most relevant differential diagnoses: 1. erysipelas, 2. stasis dermatitis, 3. hyperergic ictus reaction, 4. superficial and deep vein thrombosis, 5. gout, 6. chronic allergic contact dermatitis, and 7. acute toxic or allergic contact dermatitis. Algorithms/diagnostic pathways, each of which can be broken down into anamnesis, clinical examination, and diagnostics, have been developed for these seven diagnoses. In addition, the guideline group identified over 40 other relevant diagnoses and summarized their characteristics in a table to facilitate further differential diagnoses.

Clinical Introduction

Differential diagnosis for acute or chronic redness of the lower leg is often challenging. Erysipelas is frequently diagnosed and antibiotic treatment initiated. However, studies have shown that almost one-third of erysipelas diagnoses are in fact misdiagnoses [1, 2]. 92 % of patients misdiagnosed as having erysipelas will receive unnecessary antibiotic treatment, and in 85 % the misdiagnosis will lead to avoidable in-patient hospital admission [3]. The correct diagnoses in these cases were eczema, lymphedema, or lipodermatosclerosis [2]. Such high rates of overdiagnosis for erysipelas may lead to unnecessary antibiotic treatments and thus avoidable development of antibiotic resistance, while unnecessary in-patient hospital admission places an economic burden on the healthcare system. This guideline therefore intends to facilitate differential diagnostics for acute and chronic redness of the lower legs according to clinical and instrument-based findings. As a first step, the guideline committee collected all possible differential diagnoses. The seven most common or most important differential diagnoses were then identified: 1. erysipelas, 2. stasis dermatitis, 3. hyperergic ictus reaction, 4. superficial and deep vein thrombosis, 5. gout, 6. chronic allergic contact eczema, and 7. acute toxic or allergic contact eczema. Diagnostic algorithms were developed for these seven diagnoses. The most important characteristics of more than 40 other relevant diagnoses were summarized in tabular form (see supplement). This guideline does not cover treatment of the various conditions; please refer to the relevant individual guidelines.

Erysipelas

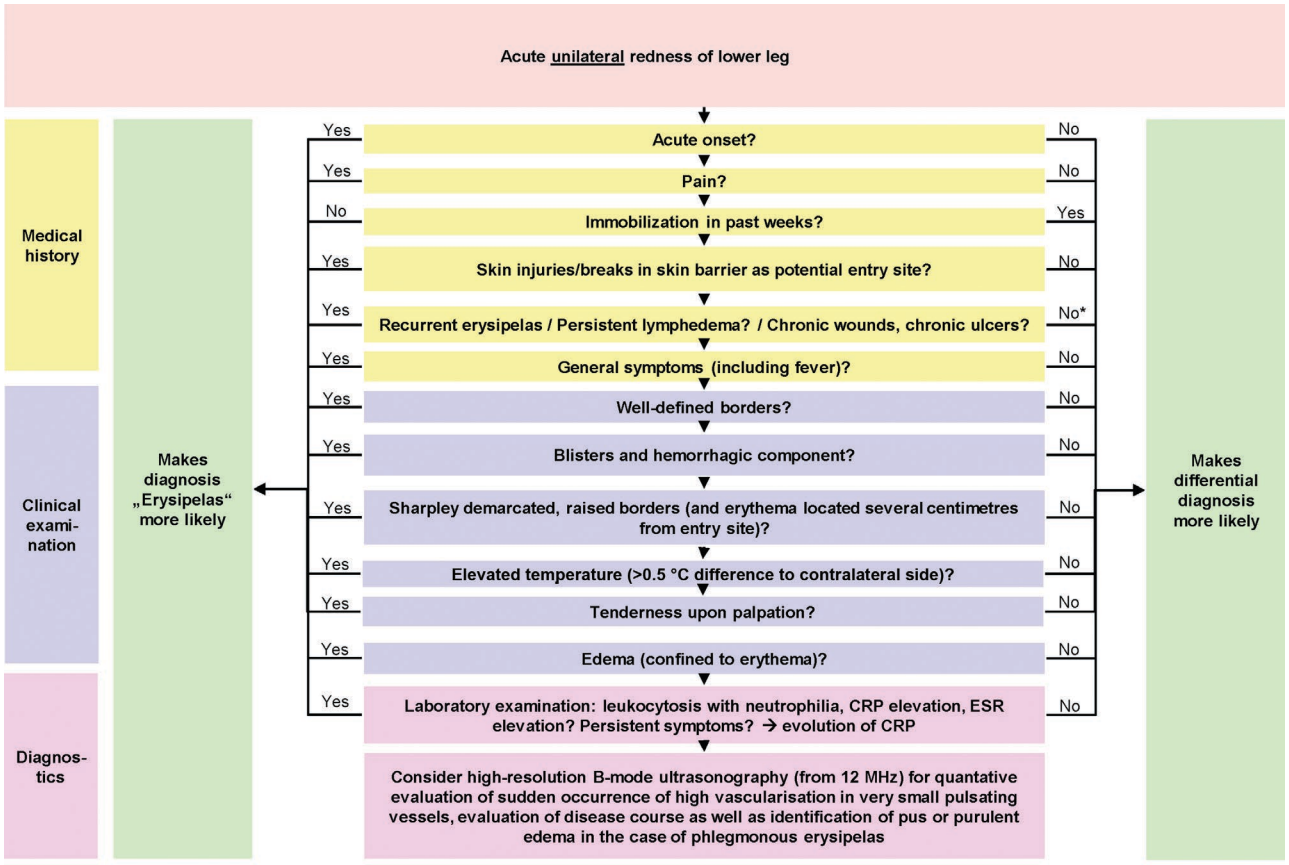

Figure 1 Algorithm erysipelas.

– Initial fever, chills, and/or malaise occurring before or simultaneously with the erythema are practically always indicative of erysipelas (unpublished data). It is therefore essential to enquire about these symptoms specifically.

– CRP and white blood count are the best in vitro indications for skin and soft tissue infections as a differentiation from herpes zoster (CRP ≥ 2.05 mg/dl indicated erysipelas with a sensitivity of 80 % and a specificity of 83.8 %) [4, 5].

- If trauma or surgery before occurrence of the erysipelas are reported, this may indicate phlegmon or type II necrotizing fasciitis according to Giuliani.
- Differentiation from severe phlegmon: high fever, reduced general health, and lymph node swelling are indicative of severe phlegmon but may be absent in cases of initially limited phlegmon [6].
- A bright red, "flame-like", shiny surface indicates "classic" erysipelas, while a bullous and/or hemorrhagic and/or necrotic appearance is more indicative of complicated erysipelas. A dark red/livid color, dull surface, and unclear margins (erythema around a wound with marginal fading) may indicate (limited) phlegmon [6]. Erythema with unclear margins combined with edema and extreme pain indicates type II necrotizing fasciitis according to Giuliani and is associated with a high lethality. Painful, doughy edema around a wound, however, is indicative of phlegmon.

Stasis dermatitis

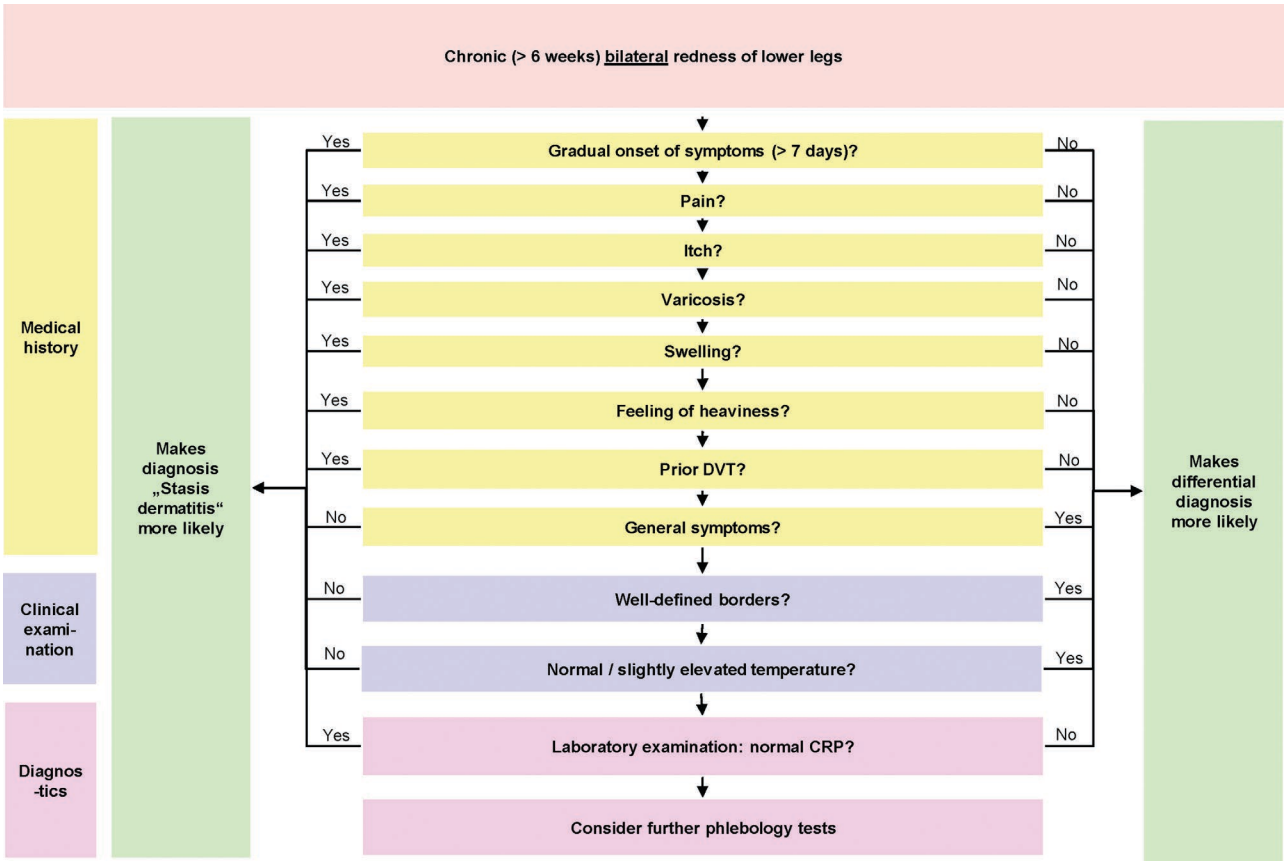

Figure 2 Algorithm stasis dermatitis.

- High-resolution B-mode sonography (above 12 MHz) can detect pathological changes in the surrounding structure (such as edema).
- Duplex sonography can identify altered flow patterns, reflux, or occlusion of deep veins in the leg.
- For expanded venous diagnostics, digital photophlethysmography (D-PPG) optically measures venous refilling times.

Hyperergic ictus reaction

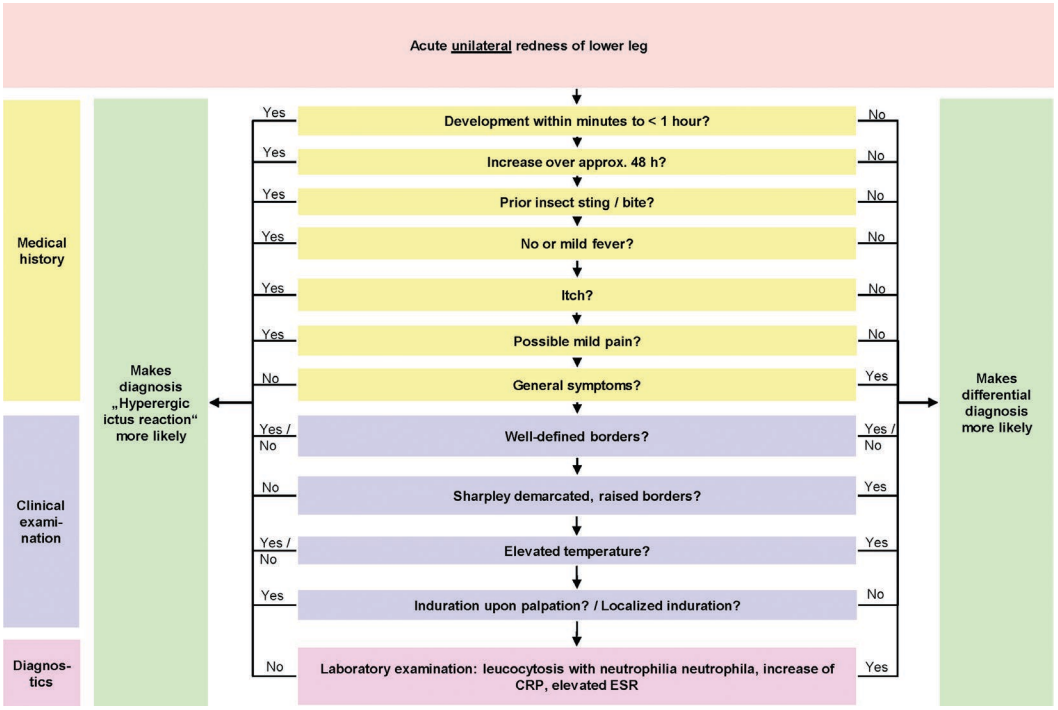

Figure 3 Algorithm hyperergic ictus reaction.

Deep/superficial leg vein thrombosis

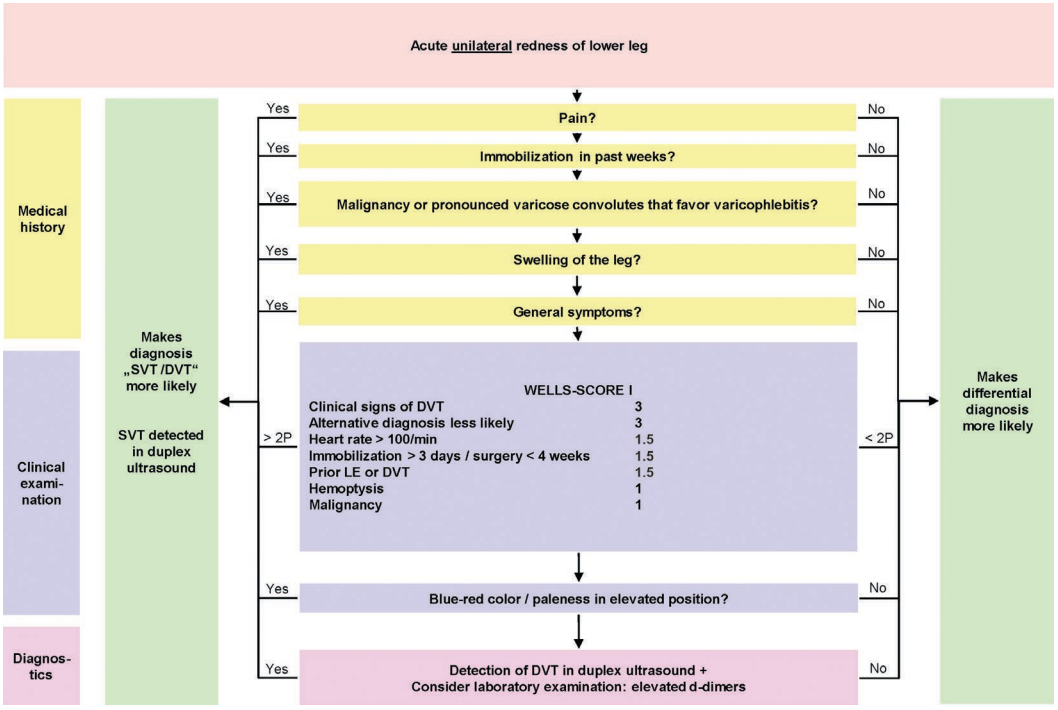

Figure 4 Algorithm deep/superficial vein thrombosis.

Additional remarks:

– Duplex sonography can identify altered flow patterns and, if present, underlying pathologies (reflux, occlusion of deep leg veins).
– Further instrumental diagnostics (angio-CT or angio-MRI) may be utilized as needed to detect thrombosis.

Please refer to the relevant guideline for further information [7].

Gout

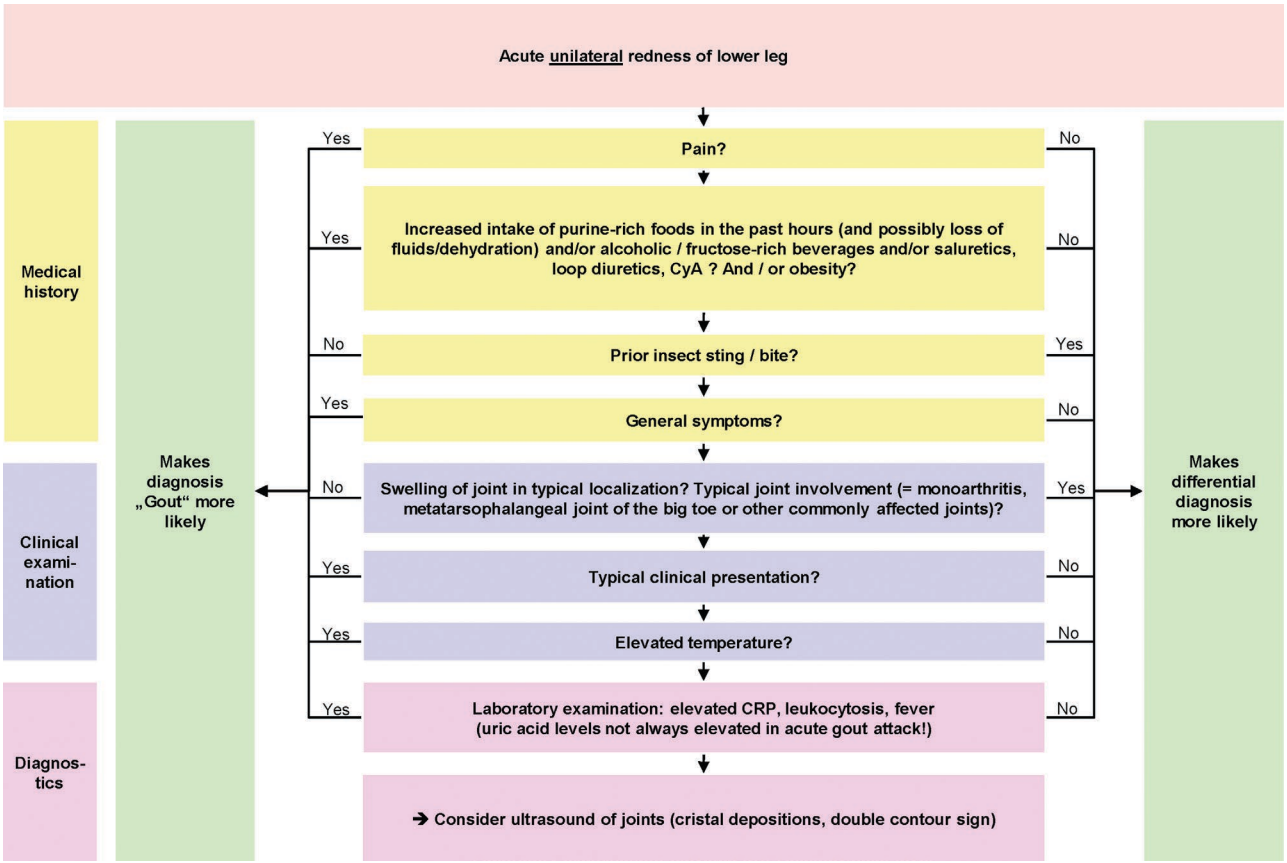

Figure 5 Algorithm gout.

Additional remarks:

– Treatment with colchicine may be attempted (1.5 mg during the attack, again 1 mg one hour later, then 1 mg per day over a period of four days). If this therapeutic approach results in improvement, the tentative diagnosis of a gout attack is confirmed.
– Sensitivity and specificity of joint sonography in gout are 83 % and 76 %, respectively [8].

Chronic allergic contact eczema

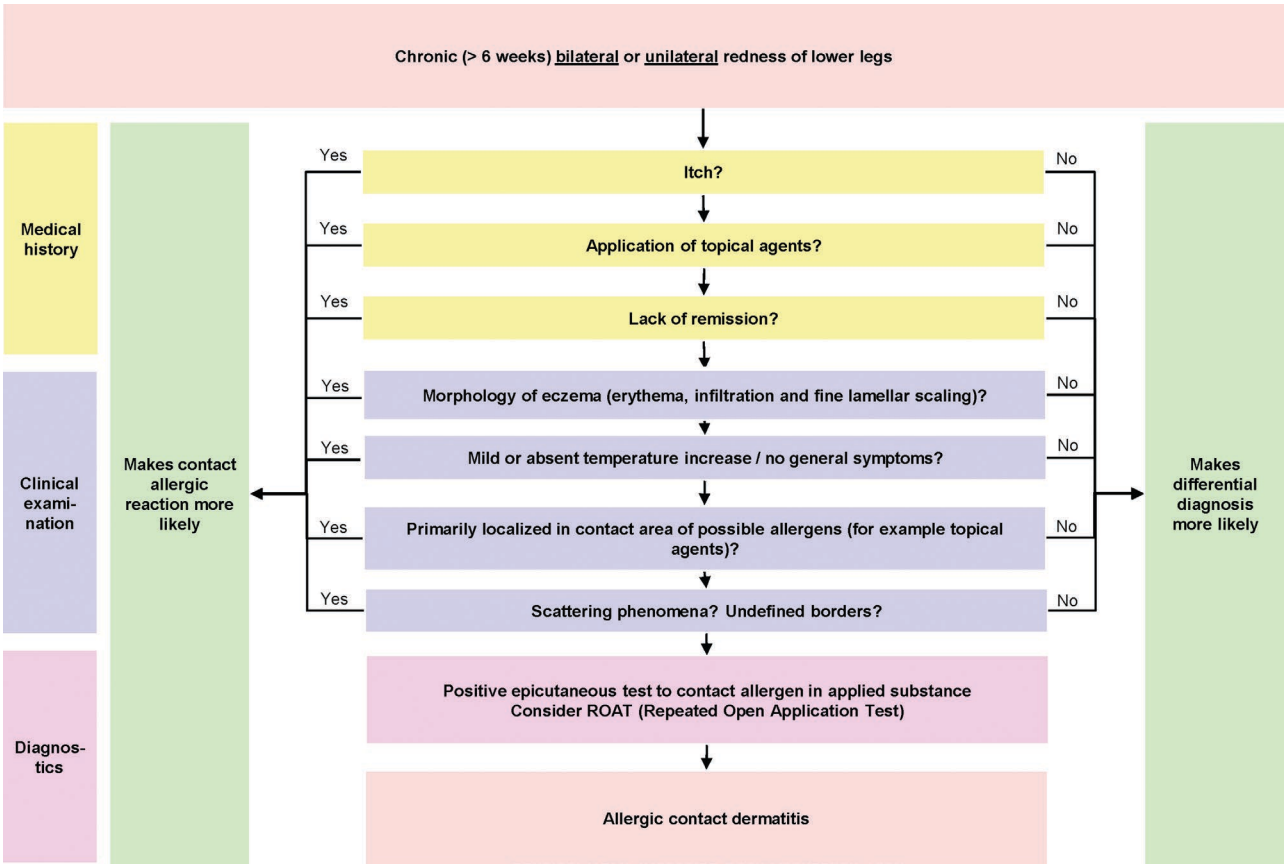

Figure 6 Algorithm chronic allergic contact dermatitis.

Additional remarks:

- Erythema with marginal scaling may indicate tinea, and eczematous skin lesions during glucocorticoid application may indicate type IV allergy to glucocorticoids.
- Patients should be asked if they have type IV allergy or if they possess an allergy passport.

Acute toxic/allergic contact eczema

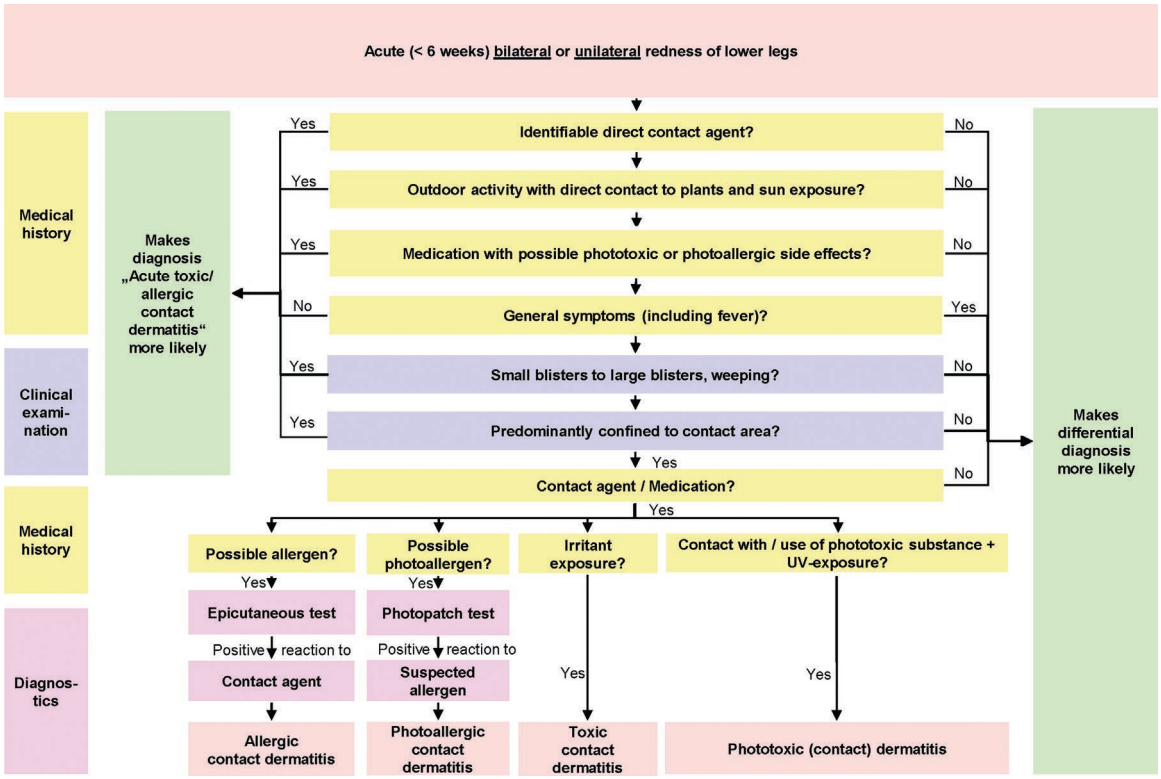

Figure 7 Algorithm acute toxic/allergic contact dermatitis.

The online appendix contains an overview of further diagnoses that need to be considered in cases of acute or chronic erythema of the lower legs.

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