

## Erysipelas

Erysipelas is an acute streptococcal inflammation of the skin, most commonly caused by infection with Group A *Streptococcus pyogenes* (GAS - Group A Streptococci).

Erysipelas affects the dermis of the skin, and lymph vessels and lymph nodes are also inflamed. It occurs most often on the legs and face, but can also occur on other parts of the body.

The disease occurs most often in the warmer summer months.

Erysipelas can be contracted at any age. It is most common in the elderly, and occurs in infants and young children in childhood.

### The causes

The most common causative agent of erysipelas is *Streptococcus pyogenes* (group A beta-haemolytic streptococcus), but it can also be caused by group C and G beta-haemolytic streptococci. Rarely, it can be caused by group B beta-haemolytic streptococci (*Streptococcus agalactiae*) or by *Staphylococcus aureus*. In new-borns, it can develop even when the umbilical cord is infected with *Streptococcus agalactiae* from the vagina. Erysipelas is caused mainly by *Streptococcus pyogenes* on the face, but also by group B, C and G streptococci on the legs.

### Reservoir

Animals and humans are the reservoir of beta-haemolytic group B, C and G streptococci. In humans, group B streptococci are found in the urinary tract, genital tract and gastrointestinal tract, while group C and G streptococci are most commonly found in the pharynx. Humans are the only reservoir for group A streptococci (GAS). In humans, *S. pyogenes* is found in the nasopharynx and on the skin.

### Transmission of infection

The source of infection is persons without symptoms and signs of disease (bacterial germ carriers). The entry point for streptococci is skin lesions, e.g. abrasions, insect bites, wounds, skin ulcers and surgical incisions, and chronic skin lesions, e.g. skin lesions due to fungal infection, psoriasis or other chronic dermatitis.

Facial erysipelas is often the result of a previous streptococcal infection of the nasopharyngeal mucosa.

### Risk factors

Risk factors for erysipelas include lymphedema, venous insufficiency, obesity, diabetes, chronic alcoholism, heart failure, kidney and liver disease, and previous surgery (e.g. removal of axillary lymph nodes after breast cancer surgery). It is more common in areas where there is a history of reduced lymphatic flow or a swelling.

## **Incubation period**

The incubation period (the time between infection and the first symptoms/signs of the disease) is short, lasting 1–3 days, rarely longer.

## **Clinical picture**

Disease symptoms and signs characteristic of erysipelas:

- Malaise, fever and chills occurring 48 hours before the appearance of skin lesions;
- A distinct, sharply defined reddening appears on a specific area of the skin, which is raised above the skin level and burns, itches and hurts;
- The lesion spreads rapidly to the surrounding area in the form of islands and peninsulas resembling red tongues;
- The border dividing the healthy and diseased skin is clearly demarcated and irregular in shape;
- The lymph nodes are swollen and painful;
- In the facial form of erysipelas, the skin lesion is often butterfly-shaped with heavily swollen eyelids;
- In bullous (blistering) scarring, in addition to redness and swelling, there are large bullae (blisters) which may rupture – bullous scarring occurs in about 5% of patients.

## **Complications and outcome of the disease**

Complications with erysipelas are rare. Complications occur due to the spread of bacteria to nearby and/or distant tissues and organs early in the course of the disease. Erysipelas can be associated with:

- Cellulitis (inflammation of the subcutaneous tissue);
- Subcutaneous nodules;
- Necrotising fasciitis;
- Gangrene (tissue death);
- Thrombophlebitis (inflammation of the vein wall with the development of clots);
- Suppurative meningitis (suppurative inflammation of the meninges);
- Endocarditis (inflammation of the heart valves);
- Streptococcal toxic shock syndrome (serious infection with pyogenes, which secrete exotoxins that damage tissues, enter the blood and can lead to sepsis, multi-organ failure and death);
- Sepsis (an extreme systemic response of the body to an infection that triggers a chain reaction of tissue damage, organ failure and can lead to death).

Very rarely, late immune-mediated complications such as acute post-streptococcal glomerulonephritis (inflammation of the kidneys, occurring 7–21 days after infection) occur. Acute rheumatic fever (inflammatory rheumatic system disease, occurring 2–3 weeks after infection) does not develop after erysipelas.

Acute post-streptococcal glomerulonephritis can be confirmed by the presence of antistreptococcal antibodies in the patient's blood a few weeks after infection with *S. pyogenes*.

Most complications can be prevented by timely and consistent treatment with appropriate antibiotics.

The disease is mostly mild and lasts from a few days to a few weeks. Death from erysipelas is extremely rare.

## Diagnosis

The diagnosis is made based on the characteristic clinical picture.

Laboratory tests reveal an increased number of leucocytes in the blood and an elevated c-reactive protein.

Microbiological tests (bacteriological cultures of blood or tissue) are not necessary, except in patients with compromised immunity, artificial heart valves or other intravascular artificial materials, or when deeper inflammation (cellulitis) is suspected. It should be kept in mind that the success rate of bacterial isolation is very low (20%–30%) in the patient with erysipelas.

## Differential diagnosis

Erysipelas differs clinically from other skin infections in three ways:

- Skin lesions are raised above the level of healthy skin;
- There is a sharp distinction between healthy and diseased skin;
- The skin lesions are distinctly red in colour.

Some other skin infections or diseases of the skin and subcutaneous tissue have a similar clinical picture, such as:

- Cellulitis (the lesion is not raised and the boundary between affected and unaffected tissue is unclear);
- Initial herpes zoster (does not progress to the other side of the face; pain and increased skin sensitivity occur before the skin changes);
- Contact dermatitis and urticarial (both diseases progress without fever);
- Erysipeloid (caused by *Erysipelothrix rhusiopathiae* bacilli, characterized by a distinctive site of affection (fingers, hand), purplish discolouration and disproportionate pain in the affected area, and absence of systemic symptoms and signs);
- Erythema migrans in Lyme disease (sometimes similar to erysipelas, but the lesions are painless and high fever is usually absent in Lyme disease);
- Mediterranean fever (recurrent skin lesions may be very similar to erysipelas but not caused by streptococci);
- Diffuse inflammatory breast carcinoma (may mimic erysipelas, site of affection is the breast).

## Treatment

Antibiotic treatment is necessary and professionally justified to reduce the duration and intensity of symptoms, reduce the likelihood of transmission and prevent the development of complications.

Erysipelas is usually treated with penicillin for 7–10 days. The second antibiotic group is only chosen in patients who are hypersensitive to penicillin. Associated symptoms (fever, pain) are treated with analgesics and antipyretics. In case of complications (subcutaneous inflammation, tissue necrosis), surgical treatment is required.

Hospitalization is occasionally only necessary in infants, the elderly and immunocompromised patients.

Symptomatic treatment is also important alongside antibiotic treatment:

- Resting the affected part of the body;
- Cold compresses with saline;
- Elevation of the affected part of the body.

### **Chemoprophylaxis**

Chemoprophylaxis aims to protect people from infection and disease with the right medicines. In patients with recurrent erysipelas, appropriate antibiotic protection, usually benzathine penicillin, can be ordered. The second antibiotic group should only be chosen in patients who are hypersensitive to penicillin. The duration of chemoprophylaxis is determined individually. Chemoprophylaxis reduces or prevents recurrence. Erysipelas prevention is more successful in patients who have no risk factors.

### **Prevention**

There is no vaccine against erysipelas.

Maintaining good general and personal hygiene, proper care of open wounds, timely treatment of skin lesions and keeping the skin healthy are important to prevent infection:

- Wash your hands regularly;
- Use a cream to prevent dry skin;
- Avoid scratching skin.

Wear protective gloves, appropriate footwear and clothing when doing household and garden tasks that damage the skin.

### **Infectiousness**

A patient with erysipelas is not a danger to people around him/her. Erysipelas is not a contagious disease. The bacteria that cause erysipelas are found in the deeper layers of the skin and are therefore not transmitted between people.

### **Immunity**

Immunity does not develop. About a third of people who have had erysipelas have a recurrence, most often in the same place. This can cause destruction of lymphatic vessels and lead to scarring (Elephantiasis nostras verrucosa can occur).

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Erysipelas is listed as a notifiable infectious disease in Slovenia under the Communicable Diseases Act. The physician is obliged to submit a notification to the NIJZ in accordance with the notification criteria published and updated in the document Definitions of notifiable infectious diseases for the purposes of epidemiological surveillance, which can be found on the NIJZ website.