

Cellulitis complicating lymphoedema

Dr Susan Hodson

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1. What is cellulitis? How does it differ from erysipelas?

In Australian and UK medical nomenclature, cellulitis refers to an infection of the tissues of the skin, and erysipelas is a less common infection limited to the outer layer of the skin called the epidermis.

Classically cellulitis presents as a hot red patch on the skin, associated with swelling in the surrounding deeper tissues. The sufferer can develop fever and 'flu-like symptoms. The infection may spread along lymphatic vessels to the regional lymph nodes, producing a red streak on the skin ('lymphangiitis') and tender lymph nodes ('lymphadenitis').

Erysipelas is in the outer layer where oedema produces 'orange-peel' skin appearance, and infection in this layer – erysipelas- causes a raised purple-red rash with a clear boundary which is often slightly raised. Blisters during erysipelas are due to increased swelling in these layers just below the surface.

Overseas medical nomenclature differs from the Australian and UK system, so confusion can occur after reading European references. Beware – German and French erysipelas is what Australians call cellulitis, and what Germans call cellulitis we call cellulite!

2. Why is cellulitis important in lymphoedema?

Cellulitis is a significant illness in its own right, and severe cellulitis needs in-patient hospital care. Episodes of cellulitis lead to disruption of employment and life activities.

Cellulitis in lymphoedema can cause an irreversible increase in swelling, and successive episodes of cellulitis further increase the probability of recurrent cellulitis.

It is important for patients with lymphoedema who develop cellulitis to consult a doctor experienced in cellulitis management. In complex or recurrent cellulitis, the opinion of a dermatologist or infectious disease specialist is helpful.

3. What other conditions mimic cellulitis in lymphoedema? What is the differential diagnosis of cellulitis in lymphoedema?

First step is to consider cellulitis in different time-courses.

Cellulitis may present as:

- acute episode (rash/increased swelling/illness developing over 24 hours)
- recurrent cellulitis – repeated acute episodes
- chronic cellulitis
- acute episode complicating chronic cellulitis

Infection in cellulitis leads to INFLAMMATION – with hot, red swelling of the tissues. Other causes of inflammation, such as inflammation following radiotherapy, or allergic dermatitis, can also lead to hot red swollen skin tissues. Second step is consideration of these other non-infective causes of inflammation.

Third step is consideration of dominant presenting symptoms/signs. The presence of fever and flu-like symptoms makes infection (hence cellulitis) more likely, and their complete absence makes cellulitis less likely. Marked swelling demands exclusion of a DVT (which may co-present with cellulitis!) Marked localized tenderness may be due to superficial thrombophlebitis.

Cellulitis usually recovers after 3 weeks of an appropriate antibiotic given at a high enough dose. Secondary breast cancer invading the skin of the ipsilateral upper arm or chest can cause a chronic red skin rash which fails to respond to antibiotics.

Two special conditions are seen in lymphoedema and need to be considered in the differential diagnosis of cellulitis. First, patients with lower limb swelling may develop a red non-tender rash above the ankle on the anterior lower leg after prolonged standing especially in hot weather. This red rash resolves overnight when the legs are elevated, and discomfort in the region can be relieved by wrapping the area with cold, wet towels. This is an acute inflammation and if resolution overnight occurs, it does not require antibiotics.

The second condition, also seen with lower limb swelling, is a chronic inflammation over the front of the shins. There is frequently a past history of acute cellulitis, and at a scheduled visit (eg for garment replacement) the front of the shins are red but the patient is not unwell. The redness may persist for years. The most useful aid to diagnosis in this situation is to photograph the rash on the legs. When the rash is unchanged and the patient is not ill, the rash can be attributed to chronic inflammation, and antibiotics are not required.

Diagnosis can be complicated when two conditions occur, such as cellulitis precipitated by sunburn or an episode of cellulitis complicating the development of new secondary axillary metastases.

4. Should compression be used during an episode of cellulitis?

Expert recommendations regarding the use of compression during an acute episode of cellulitis vary.

The risks of using compression relate to increased pressure in the tissues due to the swelling caused by infection, and the danger is greater with higher levels of compression. Higher pressures than usual under compression could compromise circulation leading to tissue necrosis (similar to ‘compartment syndrome’) and/or distal ischaemia.

Tissue metabolism is increased by infection. If tissue oxygenation has been borderline under compression, then the addition of infection/cellulitis results in ischemia. This need for extra perfusion in cellulitis has been the basis of advice to reduce the level of compression during infective episodes.

However, reduction of lymphoedema swelling using compression reduces the frequency of episodes of cellulitis, presumably by improving local immunity, so it has been thought that reducing swelling during cellulitis, especially chronic episodes, contributes to resolution of the cellulitis.

Considering all the above factors, use of compression in cellulitis needs to be monitored more closely than when swelling is stable, and close observation is essential until the cellulitis is controlled by antibiotic treatment (usually 24-48 hours) if compression is used at this early stage. Assessment of pain is important to prevent compartment syndrome. Usual garments may be too tight with the additional fluid due to infection so bandaging in the short term may be required. If there is a permanent irreversible increase in girths following an episode of cellulitis new larger garments will be required. If swelling during an episode of cellulitis is mild, and usual garments are comfortable, garment wear may continue.

Cellulitis complicating multi-layered bandaging needs close monitoring, and the decision to cease or continue a course of bandaging needs to be based on the individual circumstances. Use of prophylactic antibiotics in future bandaging for that individual would be recommended.

References:

Cooper R and White R (200): "Cutaneous infections in lymphoedema" from Journal of Lymphoedema 4 (1):44-48

Australasian Lymphology Association (2008): The management of cellulitis in lymphoedema position statement. www.lymphology.asn.au

Sue Hodson

smhodson@bigpond.com