Management of cellulitis in primary care

In 2011-12 there were 62,867 admissions in England and Wales coded for cellulitis. The mean length of stay was 6.6 days and 90% of the admissions were in patients over the age of 60 years. Cellulitis accounted for 1.1% of emergency hospital admissions during 2011-12 [1]. It is an infection that results in high morbidity and severe financial costs to healthcare providers worldwide [2].

Cellulitis is an acute, spreading, pyogenic inflammation of the lower dermis and associated subcutaneous tissue, usually associated with an identifiable break in the skin as result of trauma, laceration, burn or bite [5][6]. It presents as progressive onset of a red, painful, hot, swollen and tender area of the skin. Constitutional upset with fever and malaise occurs in most cases, and may be present before the localising signs. Blistering/bullae, superficial haemorrhage into blisters, dermal necrosis, lymphangitis and lymphadenopathy may occur. The leg is the most commonest site and there may be an identifiable portal of entry, for example, a wound, an ulcer or signs of tinea infection. Please note that bilateral leg cellulitis is extremely rare [6][8] and usually only one limb is involved. The most common infecting organisms in adults are streptococci (esp. Group A streptococcus) and *Staphylococcus aureus*. Less common organisms include *Streptococcus pneumonia, Haemophilus influenza*, Gram negative bacilli and anaerobes [3].

Clinical Features of cellulitis	
Feature	Comment
Unilateral	If bilateral consider another diagnosis (see below)
Sudden onset	May have flu-like symptoms
Red, hot, swollen, tender, area of demarcation	Can mark leg to check when receding
Scratch, cut, ulcer, fungal infection of feet	Check for a portal of entry
Systemically unwell	Check fever, malaise, rigors, vomiting
Enlarged lymph glands, lymphangitis	Spreads proximally from area of cellulitis

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Inappropriate diagnosis of cellulitis is a problem [7][8]. The absence of typical clinical features should make one think of the main differential diagnoses, especially:

- Varicose eczema which is often **bilateral** with crusting, scaling and itch or other lower leg eczema.
- DVT with pain and swelling without significant erythema.
- Acute liposclerosis (dermatologic condition for referral to dermatology) which may have pain, redness and swelling in the absence of significant systemic upset [4].

The antibiotic guidelines within Tameside and Glossop, take into account that the vast majority of cases of cellulitis are caused by *Staphylococcus aureus* and streptococci (esp. Group A streptococcus) [5][8]. Empiric treatment with high dose flucloxacillin, which is a bactericidal agent, will eliminate the organism(s) responsible for the infection. It is also recommended that therapeutic doses are used to ensure adequate systemic drug levels to ensure effective elimination of the bacteria.

Consider admitting to hospital patients with:

- Severe or rapidly deteriorating cellulitis (e.g. cellulitis affecting extensive areas of the skin or which is spreading), or an uncertain diagnosis with sinister signs or symptoms (e.g. possible necrotising faciitis).
- Severe systemic illness (e.g. fever, or nausea and vomiting).
- Comorbidities that may complicate or delay healing (e.g. peripheral vascular disease, chronic venous insufficiency, morbid obesity, immunosuppression, intravenous drug abuse).
- The very young (e.g. children under 1 year of age), and the elderly or very frail individuals.
- Lymphoedema (gross swelling of the limb)
- Facial cellulitis,
- Periorbital cellulitis (obtain urgent assessment from an ophthalmologist).

Refer patients who:

- Fail to respond to oral antibiotics / standard first line treatments.
- Have recurrent cellulitis, for example more than two episodes at the same site [5].

Additional self care advice

- Use paracetamol and ibuprofen for pain and fever.
- Drink adequate fluids to prevent dehydration.
- Elevate the leg for comfort and to relive oedema.
- Advise the patient to seek immediate advice if the antibiotics are not tolerated, skin condition worsen after 48 hours (although ensure that they are warned about an initial increase in redness), or if systemic symptoms develop or worsen (e.g. high temperature, or nausea and vomiting) [5].

Cellulitis secondary to diabetic foot ulcer should be managed as per diabetic foot guidelines and advice sought from Vascular Surgeons on any further surgical management / debridement.

Flucloxacillin-associated hepatotoxicity

It is appreciated that some clinicians maybe concerned about the higher dose of flucloxacillin (1g) recommended in the Tameside and Glossop antimicrobial guidelines due to hepatotoxicity. However, flucloxacillin associated heptotoxicity is very rare.

The crude incidence of flucloxacillin-associated acute liver injury has been estimated as 1.8 per 100,000 prescriptions or 2.6 per 100,000 users, and that of flucloxacillin-associated jaundice as 3.6 per 100,000 prescriptions [9].

Older patients and those receiving more than two weeks of treatment appear at significantly increased risk of flucloxacillin-associated jaundice [9].

Bearing these points in mind and the fact we need to ensure adequate treatment of the infection, the recommendation is to use short course high dose antibiotic therapy to ensure eradication of pathogenic microorganisms.

Has the patient presented with the following symptoms:

1. **Flu-like symptoms**
2. **Malaise**
3. **Onset of unilateral swelling**
4. **Pain**
5. **Redness**

ALL MUST BE PRESENT TO CONFIRM DIAGNOSIS OF CELLULITIS

NO

Unlikely to be cellulitis

Please review the diagnosis.

Possible differential diagnoses:

- Varicose eczema
- DVT
- Acute liposclerosis
- Lower leg oedema with secondary blistering
- Erythema nodosum
- Other panniculitides or vasculitides
- Pyoderma gangrenosum

This list is not exhaustive and another diagnosis maybe more appropriate.

YES

The patient is not systemically toxic and has no uncontrolled co-morbidities

NO

The patient is systemically toxic

OR

The patient is systemically well but with a co-morbidity (e.g. peripheral vascular disease, chronic venous insufficiency or morbid obesity)

NO

The patient has significant systemic upset (e.g. acute confusion, tachycardia, tachypnoea, hypotension or unstable co-morbidities) that may interfere with a response to therapy or have limb threatening infection due to vascular compromise

YES

Patient can be prescribed:

FLUCLOXACILLIN 1g QDS or **CLARITHROMYCIN 500mg BD** (if penicillin allergic)

and reviewed* in 3 days.

If no resolution in infection after 3 days then please review diagnosis. If only partial resolution then prescribe a further 2 days of antibiotic treatment and review response.

YES

Patient may require short-term (up to 48 hours) hospitalisation OR can be treated as per the ambulatory care pathway

YES

Admit to hospital

*can be as a telephone consultation, but please ensure documentation is complete to allow a full and detailed audit trail

References

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