

ACC Review

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»» *A distillation of best practice reflecting ACC's current position*

Cellulitis

- »» Cellulitis is a common infectious condition usually caused by breaches of the skin colonised by *Streptococcus pyogenes* and *Staphylococcus aureus*.
- »» The treatment of choice is first generation narrow spectrum beta-lactam antibiotics, eg flucloxacillin, active against *Streptococcus pyogenes* and *Staphylococcus aureus*.
- »» Rates of hospitalisation are increasing and the admission rate in New Zealand is now twice that of the USA and Australia.
- »» Maori and Pacific children appear to be at significantly higher risk of acquiring cellulitis than European children.
- »» Infections acquired from animal, human or environmental pathogens, such as bites or water, may require treatment targeted at the relevant pathogen.

Introduction

Cellulitis is an acute spreading infection of the skin involving the subcutaneous tissues. It is the third most common reason for admission to Starship Hospital.¹

This ACC Review summarises information on cellulitis and associated erysipelas.

Epidemiology

Skin and soft tissue infections are common in our community but the exact burden of disease is unknown. Studies in New Zealand hospitals indicate increasing admission rates for cellulitis.^{2,3,4,5} It is estimated that the admission rate for true cellulitis (12.9 per 10,000) is twice that of Australia (6.8 per 10,000) or the USA (6.5 per 10,000).⁴

Cellulitis has a disproportionate impact on Maori and Pacific families. In South Auckland, the relative risk of skin infections is 3.89 times greater for Maori and Pacific children than European children.⁵ Studies indicate that treating skin infections is a significant part of the workload for some primary care providers.^{1,6}

Causes

Breaches of the skin from insect, animal, and human bites, trauma, surgery, and skin conditions (eg eczema), can lead to colonisation by bacteria, causing cellulitis. In adults, recurrent episodes can occur following surgery in the ipsilateral lower and upper limbs, breast, inguinal area, upper thighs, and lower abdomen.

Factors such as overcrowded housing and reduced access to medical care can contribute to acquiring cellulitis.⁴

Clinical Features

Infection starts with local tenderness, pain and erythema, which may spread rapidly. Fever, chills, nausea, and vomiting may accompany or precede the skin changes. Regional lymphadenopathy is common and bacteraemia may occur.⁷

Erysipelas is a superficial form of cellulitis with prominent lymphatic involvement, presenting as a painful lesion with an indurated and erythematous border.

Microbiology

Identification of the causative microorganism is successful in only 20 to 30 per cent of cases.⁸ *Streptococcus pyogenes* (Group A streptococci), other beta-haemolytic streptococci (Groups B, C and G) and *Staphylococcus aureus* account for the majority of isolated organisms. *Staphylococcus aureus* is associated with traumatic or surgical wounds and leg ulcers. Enterococci species, Enterobacteriaceae and anaerobes occasionally cause cellulitis, the latter found with human bites. Specific pathogens are associated with the following situations: exposure to fresh or salt water, *Vibrio* species such as *V. vulnificus* and *Aeromonas hydrophila*; exposure to fish, meat or veterinary activities, *Erysipelothrix rhusiopathiae*; dog or cat bites, *Pasteurella multocida*; and *Streptococcus iniae* from aquacultured fish.

Differential Diagnosis

Necrotising fasciitis and anaerobic myonecrosis need to be distinguished from cellulitis, as surgical debridement is required for these infections.

Consider superficial thrombophlebitis, deep vein thrombosis, contact dermatitis, drug reactions, insect bites or stings, gouty arthritis and less commonly eosinophilic cellulitis (Wells syndrome) or neutrophilic dermatosis (Sweet syndrome)⁹ in cases that do not respond well to conventional antimicrobial treatment.

Treatment

Narrow spectrum beta-lactam antibiotics, such as flucloxacillin or a first generation cephalosporin are the treatment of choice for cellulitis.^{10,11} Broad spectrum antibiotics, third generation cephalosporins, newer, hospital only antibiotics such as linezolid and fluoroquinolones, and combination antibiotic therapy¹² are unnecessary in treating uncomplicated cellulitis.

In the absence of high risk factors (eg diabetes, HIV, other immunocompromised states, malignant disease etc), and evidence of systemic symptoms suggesting septicaemia or bacteraemia (eg febrile, tachycardic, tachypoenic), intravenous (IV) antibiotics are not required. However, IV use may be justified when there are issues of compliance with an oral medication regime.

Benzyl penicillin can be used for erysipelas. For methicillin-resistant infection or hospital or community-acquired *S. aureus*, give clindamycin or erythromycin for mild-to moderate infections. Hospital only vancomycin may be required for serious infections. For patients allergic to penicillin, consider a first generation cephalosporin or erythromycin. For patients with type I allergic reactions, use erythromycin. Infections acquired from animal, human or environmental pathogens, such as bites or water, may require treatment targeted at the relevant pathogen, eg amoxicillin-clavulanate for human, dog, and cat bites and ciprofloxacin for exposure to fresh or brackish water.

Treatment is usually required for 7 to 14 days, depending on the severity of the infection.

Antibiotics must be supplemented by wound care, good hygiene, and treatment of all underlying skin conditions. Elevation and immobilisation of the involved limb may reduce swelling. For patients with recurrent episodes, the prophylactic use of oral penicillin or amoxicillin (250 to 500 mg twice daily) may prevent additional episodes.¹³

Prevention

Measures aimed at reducing insect bites can limit recurrent infection, eg controlling fleas from domestic animals in the home. Cellulitis can be infectious. Cover the wound if contact with other people is possible.

Issues Relevant to ACC

ACC will provide cover and entitlements (eg treatment costs) for infections consequent upon a covered personal injury, eg insect bite, scratch, cut or abrasion. As cellulitis can occur in the absence of any covered personal injury, not all cases will be covered by ACC.

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