

Cellulitis

By Megan Sebasky

- **Definition**
 - Acute infection of skin and subcutaneous tissues (deeper dermis and subcutaneous fat)
 - Purulent such as furuncle, carbuncle, abscess (*S. aureus* including MRSA) vs non-purulent such as cellulitis, erysipelas, necrotizing infection (beta-hemolytic *Streptococcus* (groups A, B, C, G))
- **Etiology**
 - Diverse; depends on immune status, travel history, antibiotic use, lifestyle, hobbies, animal contact/bites, human bites, IV drug use, trauma
 - Etiologic diagnosis is frequently difficult and generally unnecessary (in cases of mild to moderate illness empiric treatment suffices)
- **Presentation**
 - Obtain thorough history to identify potential exposures (see above list) and pertinent co-morbidities (venous stasis, obesity, eczema, lymphedema, previous episodes of cellulitis, tinea pedis)
 - Common physical exam findings include rapidly spreading edema, erythema, and warmth, lymphangitis, (more common with strep), regional lymphadenopathy, abscess, furuncle, carbuncle (more common with staph), vesicles and bullae (often filled with clear fluid), cutaneous hemorrhage (petechiae, ecchymoses)
 - Signs of systemic toxicity (fever, hypotension, tachycardia, confusion) may develop hours before cutaneous findings
 - Laboratory evidence of systemic toxicity (metabolic acidosis, acute kidney injury) indicates a severe infection
- **Diagnosis**
 - Clinical diagnosis based on history and physical exam
 - Laboratory abnormalities include elevations in markers of an inflammatory state (CRP, ESR, WBC)
 - Imaging not indicated unless a deeper infection (abscess, osteomyelitis) is suspected
 - Attempts to identify a specific “bug” are usually not helpful but may be considered in patients with severe infections or unusual exposures
 - Gram stain and culture of needle aspiration (blood, pus, bullae) or punch biopsy
 - Positive in 2-40% of cases
 - Blood cultures
 - Positive in <5% of cases
 - Blood cultures or cutaneous aspirates are not usually indicated in mild to moderate infections (since usually negative) but can be checked if immunosuppression, malignancy, neutropenia, or animal bites
- **Treatment (see figure)**
 - Choose antibiotics based on suspected pathogen, local resistance patterns, and severity of illness (oral or IV?)

- Suspect community-acquired MRSA in patients with purulent cellulitis (abscess formation, draining wounds) or penetrating trauma
- Incision and drainage is required for cutaneous abscesses
- Recommended duration of treatment is 5 days with extension if there is no clinical improvement (7-14 days in neutropenia)
- For animal bites, amoxicillin-clavulanate and Tetanus, diphtheria, pertussis (Tdap) vaccine if not given within 10 years
- For recurrent skin abscesses, consider 5-day decolonization (intranasal mupirocin twice daily, chlorhexidine washes daily, decontamination of towel, clothes, personal items daily)

• **Further Reading**

- Moran GJ, Abrahamian FM, LoVecchio F, and Talan DA. Acute bacterial skin infections: developments since the 2005 Infectious Disease Society of America (IDSA) guidelines. *J Emerg Med* 2013;44(6):e397-e412.
- Gunderson CG. Cellulitis: definition, etiology, and clinical features. *Am J Med* 2011;124(12):1113-22.
- Stevens DL, Bisno AL, Chambers HF, et al. Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections: 2014 Update by the Infectious Disease Society of America. *Clin Infect Dis* 2014;59(2):e10-e52.

