“PSEUDO-CELLULITIS”
- ALL THAT’S RED IS NOT INFECTION

JAN 18 2018
ASP ECHO CLINIC
CHARLES KRASNER, M.D.
FIRST HOSPITALIZATION:
62 YEAR OLD MALE ADMITTED WITH DIAGNOSIS OF CELLULITIS

Hx of AODM, Morbid Obesity, CHF

Complaining of increasing bilateral LE swelling and burning, itchy rash.
Temp 99.2, WBC- 9,200. Blood cultures ordered
HOSPITAL COURSE

- Patient admitted and treated with iv clindamycin to cover staph/strep, leg elevation, increased diuretics and low sodium diet
- Over next few hospital days bilateral leg swelling and redness both improve
- Blood cultures negative
- Discharged home on 7 days more of oral clindamycin
- Does well initially, but after awhile the bilateral swelling and redness return. Patient returns to ER and readmitted.
- DX: recurrent cellulitis/treatment failure
- Now placed on vancomycin/pip-tazobactam for empiric cellulitis coverage
CELLULITIS DIAGNOSIS

- The key characteristics of cellulitis are redness, warmth, tenderness, and swelling of the skin.
- A history of trauma and pain in the affected area and evidence of leukocytosis suggest cellulitis.
- A symmetric or diffusely scattered pattern indicates a condition other than cellulitis, which is overwhelmingly unilateral, with smooth, indistinct borders.
- Other factors pointing to cellulitis are underlying immunosuppression, a more rapid progression, systemic symptoms (eg, fever, leukocytosis) and comorbidities such as diabetes and peripheral vascular disease.
- A long-standing, slowly progressive course and a history of unsuccessful treatment with antibiotics are strong indicators of a condition other than cellulitis.
LEG CELLULITIS
ARM CELLULITIS - LOOK FOR ABSCESS
Cellulitis Treatment Guidelines

Management of SSTIs

**Purulent**
- **Severe**
  - Incision and Drainage
  - Culture and Sensitivity
  - **Empiric Rx**
    - Vancomycin OR
    - Daptomycin OR
    - Linezolid OR
    - Televancin OR
    - Ceftaroline
  - **Defined Rx**
    - MRSA
    - MSSA
    - Nafcillin OR
    - Cefazolin OR
    - Clindamycin
- **Moderate**
  - Incision and Drainage
  - Culture and Sensitivity
  - **Empiric Rx**
    - TMP/SMX OR
    - Doxycycline
  - **Defined Rx**
    - MRSA
    - TMP/SMX
    - MSSA
    - Dicloxacillin OR
    - Cephalaxin OR
- **Mild**
  - Incision and Drainage
  - Culture and Sensitivity
  - **Empiric Rx**
  - **Defined Rx**

**Nonpurulent**
- **Severe**
  - Necrotizing Infection/Cellulitis/Erysipelas
  - **Emergent Surgical Inspection/Debridement**
    - Rule out necrotizing process
  - **Empiric Rx**
    - Vancomycin PLUS Piperacillin/Tazobactam
  - **Culture and Sensitivity**
  - Defined Rx (Necrotizing infections)
    - Monomicrobial
    - Staphylococcus pyogenes
    - Penicillin PLUS Clindamycin
    - Clostridial sp
    - Penicillin PLUS Clindamycin
    - Vibrio vulnificus
    - Doxycline PLUS Cefazolin
    - Aeromonas hydrophilia
    - Doxycline PLUS Ciprofloxacin
    - Polymicrobial
    - Vancomycin PLUS Piperacillin/Tazobactam
  - **Oral Rx**
    - Penicillin VK OR
    - Cefpodoxime OR
    - Dicloxacillin OR
    - Clindamycin
  - **Defined Rx**

*Since daptomycin and televancin are not approved for use in children, vancomycin is recommended; clindamycin may be used if clindamycin resistance is < 10-15% at the institution.

DX: PSEUDO-CELLULITIS

- This patient has stasis dermatitis - typical comorbidities and bilateral involvement, itching and burning, and lack of fever or leukocytosis all point away from cellulitis.
- In contrast, true bacterial cellulitis - presents with a PAINFUL rash, a SINGLE, UNILATERAL focus of infection with ill-defined borders, little scaling, enlarging quickly.
- There are multiple other causes of “pseudo-cellulitis”
STASIS DERMATITIS - MOST COMMON CAUSE OF PSEUDO-CELLULITIS

- Patients can present with ill-defined, bilateral, pitting edema of the lower extremities, typically with erythema, hyperpigmentation, serous drainage, and superficial desquamation.
- The inciting factor is chronic venous insufficiency, leading to interstitial edema, extravasation of red blood cells, and decreased tissue oxygenation leading to microvascular changes.
- It is generally bilateral, the process will have been ongoing for years, there is often pitting edema, and the legs should be nontender.
STASIS DERMATITIS
OTHER POSSIBLE CAUSES OF PSEUDO-CELLULITIS

Gout
DVT
Atopic Dermatitis
Lymphedema
“CAUSE AND CONSEQUENCES ASSOCIATED WITH MISDIAGNOSED LOWER EXTREMITY CELLULITIS”
Q.Y WENG ET. AL., JAMA DERMATOLOGY 2017;153(2):141-146

- Retrospective study by dermatologists of 259 consecutive patients admitted to hospital with initial diagnosis of “lower extremity cellulitis” in Massachusetts
- Patient course through hospitalization and 30 days post-Discharge analyzed
- 79 (30.5%) were misdiagnosed. 2/3 (52 patients) of these 79 patients were hospitalized primarily for this diagnosis, of which 44 patients of these 52 would not have even needed to be in hospital for the correct diagnosis
Pseudo-cellulitis diagnoses -79 cases in this article

- Vascular 48 (60.8)
  - Venous stasis dermatitis 15 (19.0)
  - Venous stasis ulcers 6 (7.6)
  - Congestive heart failure 5 (6.3)
  - Deep venous thrombosis 5 (6.3)
  - Peripheral vascular disease 3 (3.8)
- Calciphylaxis 3 (3.8)
- Gout or pseudogout 6 (7.6)
- Allergic contact dermatitis 3 (3.8)
- Drug reaction 2 (2.5)

- Pyoderma gangrenosum 1 (1.3)
- Infectious 6 (7.6)
- Ecthyma gangrenosum 2 (2.5)
- Tinea pedis 1 (1.3)
- Septic bursitis 1 (1.3)
- Osteomyelitis 1 (1.3)
SUMMARY OF CELLULITIS DX:

- Cellulitis is rarely bilateral.
- Patients with cellulitis often have systemic symptoms, such as fever and leukocytosis.
- A chronic or recurrent course points to a diagnosis other than cellulitis.
- Plaques with a “bound-down” appearance or dark pigmentation point to a chronic disease rather than cellulitis.
- Stasis dermatitis is the most common mimic of cellulitis.
SUMMARY: THE OVER DIAGNOSIS OF “CELLULITIS”

• Repeated studies using dermatologist consultation to make definitive diagnosis in patients hospitalized with “cellulitis” diagnosis consistently show 30 to 50% misdiagnosis by admitting physicians
• Treatment Guidelines for cellulitis don’t help if the diagnosis is wrong
• “Handshake Stewardship” can be useful to improve treatment outcomes