Bacterial Infections

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Conflict of interest statement:

Book royalties - Elsevier

Also no stock in grocery stores that sell Rapini
Many of the systemic bacterial infections are more likely to be picked up on blood culture than on skin biopsy.

Send skin biopsy for culture in sterile cup with moist sterile saline on gauze, not floating in liquid – AFB, fungus, bacteria.

Get blood cultures.

Fungi more likely to be present on skin biopsy rather than in the blood.
Blood cultures results are faster nowadays

Our hospital:
Gram stain of positive culture
Verigene (rapid PCR) – 3 hours
If Verigene neg, then MALDI (matrix-assisted laser desorption/ionization) uses mass spectra to indentify
Then final identification and antibiotic susceptibilities in 3 to 5 days.
Bacterial colonization – not “infection”

Don’t just swab specimens if systemic infection
Fat necrosis with bacteria – MRSA and Pseudomonas
Rashes at the hospital—most are one of five things

1. Drug rash
2. Infection
3. Reactive to something else (vasculitis, blood products, contact, tumor antigens, unknown)
4. Leukemia, lymphoma, solid tumor in skin
5. Graft-vs-Host disease
INFECTIONS
not always as they seem
Cellulitis-like leg edema from gemcitabine (Gemzar)
Vasculitis causes

- Infection (hepatitis C, fungus)
- Connective tissue disease (lupus, cryoglobulinemia, etc)
- Drug
- Idiopathic
Candida sepsis – GMS stain of yeast
Purpura, especially palpable – always consider fungus – but can also be bacteria
Meningococcemia!
• Vasculitis –
Xeloda (capecitabine)
Beta-hemolytic streptococcal vasculitis
Gram negative vasculitis
Streptococcus viridans endocarditis
Morbilliform

- = maculopapular
- = exanthematous
- The most common type of (1) drug rash
- Resembles (2) viral eruptions and secondary (3) syphilis
- Usually less dangerous than urticarial eruptions or vasculitis
Drug – NOT infection
Secondary syphilis
Forearm ulcer after local trauma in Mexico
DP-88-4892
Gram stain
Nocardia asteroides
Nocardia brasiliensis

- Pulmonary, CNS, Skin
- Gram+, GMS+, AFB+
- Sulfur granules sometimes
- Grows in 2-5 days in blood agar or routine culture, but lab has to hold it longer
- Aerobic, unlike Actinomyces
Nocardiosis

• Primary inoculation non-systemic form often resolves spontaneously

• Trimethoprim-sulfamethoxazole DS bid for 2 to 4 weeks

• F/U on this case – healed readily with above Rx
Disseminated nocardiosis
A papulosquamous eruption – psoriasis?
Eosinophils – is it drug?
Lymphocytes plasma cells
• Differential diagnosis?
• What definitive tests?
Warthin-Starry spirochete
Spirochete immunostain is about 80% reliable
Secondary syphilis histologic patterns

- Perivascular
- Psoriasiform
- Lichenoid
- Granulomatous
- Interstitial granulomatous dermatitis
- Vasculitis ("lues maligna")
Plasma cells

- Common on mucous membranes, including perinasal
- Infectious diseases
- Morphea
- Lyme disease
- Folliculitis
- 1/3 of secondary syphilis cases: no plasma cells
Secondary syphilis usually is NOT

• Usually NO pruritus
• Usually NO eosinophils (like LE)
• Usually NOT vesicular in adults
Secondary syphilis

• Not a zebra – everyone knows about it, not just for “syphilologists”
• Just a reminder that if you’re not seeing it much, you probably are missing it
• Either the clinician or the pathologist has to think of it
• I initially missed the one that looked like interstitial GA with no plasma cells
Syphilis - palms
Granulomatous late secondary syphilis
Lues maligna = syphilitic vasculitis
Patient was found in a Houston park, inebriated, lying on a fire ant hill
Fire ant pustules with pseudomonas superinfection
Stasis ulcer with pseudomonas
Pseudomonas
Zebra vs horse: Lumpy jaw (actinomyocis)?

Actually was Staph aureus

Common things are common
Actinomycosis sulfur granule
Dental sinus tract – need dentist
Abscess with osteomyelitis
SSSSS = Staph scalded skin syndrome
Staph scalded skin syndrome
Need stat frozen section for SSSS vs TEN – per some books?

Usually you can tell just by walking in the room
SSSS usually young children, not so much in adults unless renal insufficiency
If you need biopsy, you can just roll up some of the peeling skin into a ball and submit as biopsy rather than cutting the patient
Infectious cellulitis
Patient with hand eczema!
Patient with hand eczema! – had red streak of lymphangitis
Cellulitis – abscess - Staph
Erysipelas – usually strept
Erysipeloid in a meat packer
Erysipelothrix rhusiopathiae

- If localized, may be self-limited
- Some patients have systemic symptoms and it can disseminate – endocarditis, etc
- Rx – penicillins, cephalosporins, ceftriaxone
- Resistant to vancomycin
Syphilitic alopecia – had NO RASH!
Syphilis more often annular with darker skin types
Gonococcemia (with arthritis) - more likely to find organism in genital area
Gonococcemia
necrotic pustule
Meningococcemia
Ecthyma gangrenosum = pseudomonas sepsis
Ecthyma gangrenosum
(pseudomonas)