Hospital-Based Dermatology: Common and Tough Consult Cases

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I have no relevant conflicts of interest to disclose.
I may discuss off-label uses of medications.

Goals of this talk

• Present common morphologies that arise during inpatient consultations
• Generate a working differential diagnosis
• Use cases to demonstrate key teaching points about diagnosis or management

Common Morphologies in the Hospital

1. Morbilliform
2. Cellulitic plaques
3. Purpura
4. Ulcers
5. Vesiculobullous
6. Pustules

Morbilliform

• Measles- like
• Pink to red macules and papules
  – No surface change
• May be called “maculopapular”
• Most common differential in the hospital:
  – Drug eruption
  – Viral exanthem
  – Acute Graft vs. Host Disease
• Most often doesn’t need a biopsy
Drug Eruptions: Degrees of Severity

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<td>Drug hypersensitivity reaction</td>
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<td>Minimal systemic symptoms</td>
<td>Toxic epidermal necrolysis (TEN)</td>
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Possibly life threatening

Drug Induced Hypersensitivity Syndrome

- Skin eruption associated with systemic symptoms and alteration of internal organ function
- “DRESS” - Drug reaction w/ eosinophilia and systemic symptoms
- “DIHS” = Drug induced hypersensitivity syndrome
- Begins 2-6 weeks after medication started
  - time to abnormally metabolize the medication
- Role for viral reactivation, esp HHV6, CMV, EBV
  - Can check these PCRs
- Mortality 10%

DIHS - Clinical Features

- Rash
  - Facial edema
- Fever (precedes eruption by day or more)
- Pharyngitis
- Hepatitis
- Arthralgias
- Lymphadenopathy
- Hematologic abnormalities
  - Eosinophilia
  - Atypical lymphocytosis
- Other organs involved
  - Interstitial pneumonitis, interstitial nephritis, thyroiditis
  - Myocarditis: acute eosinophilic myocarditis or acute necrotizing eosinophilic myocarditis
  - EKG, echocardiogram, cardiac enzymes

DIHS - Drugs

- Aromatic anticonvulsants
  - Phenobarbital, carbamazepine, phenytoin
  - THESE CROSS-REACTION
- Sulfonamides
- Lamotrigine
- Dapsone
- Allopurinol (HLA-B*5801)
- NSAIDs
- Other
  - Abacavir (HLA B*5701)
  - Nevirapine (HLA-DRB1*0101)
  - Minocycline, metronidazole, azathioprine, gold salts
Drug Induced Hypersensitivity Syndrome

- Each class of drug causes a slightly different clinical picture
- Facial edema characteristic of all
- Anticonvulsants:
  - 3 weeks
  - Atypical lymphocytosis, hepatic failure
- Dapsone:
  - 6 weeks
  - No eosinophilia
- Allopurinol:
  - 7 weeks
  - Elderly patient on thiazide diuretic
  - Renal failure
  - Requires steroid sparing agent to treat (avoid azathioprine)

Drug Induced Hypersensitivity Syndrome - Treatment

- Stop the medication
- Follow CBC with diff, LFT’s, BUN/Cr
- Avoid cross reacting medications!!!
  - Aromatic anticonvulsants cross react (70%)
    - Phenobarbital, Phenytoin, Carbamazepine
    - Valproic acid and levetiracetam (Keppra) generally safe
- Systemic steroids (Prednisone 1.5-2mg/kg)
  - Taper slowly - 3-3 months
- For allopurinol start steroid sparing agent (mycophenolate mofetil)
- Completely recover, IF the hepatitis resolves
- Check TSH monthly for 6 months
- Watch for late cardiac involvement
  - Counsel patient

Cellulitic Plaques

- Red, edematous plaques
- Often warm, tender
- If itchy, think contact dermatitis
- Most common differential in the hospital:
  - Cellulitis
  - Stasis dermatitis
  - Contact dermatitis
- Don’t miss
  - Pyomyositis
- Rarely needs a biopsy
- Bacterial culture any open or draining area
- If bilateral, think stasis dermatitis, contact dermatitis

Cellulitis

- Infection of the dermis
- Gp A beta hemolytic strep and Staph aureus
- Rapidly spreading
- Erythematous, tender plaque, not fluctuant
- Patient often toxic
- WBC, LAD, streaking

- Rarely bilateral
- Treat tinea pedis
Stasis Dermatitis

- Often bilateral, L>R
- Itchy and/or painful
- Red, hot, swollen leg
- No fever, elevated WBC, LAD, streaking
- Look for: varicosities, edema, venous ulceration, hemosiderin deposition
- Superimposed contact dermatitis common

Called to evaluate cellulitis not responding to vancomycin

Exquisite pain +/- Persistent fever
Not responding to antibiotics
No LAD

Question:
Your Next Step Is:
1. ID consult
2. MRI
3. Ultrasound
4. Surgery consult
5. Add gram negative coverage

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Pyomyositis

- Acute primary bacterial infection of skeletal muscle \(\rightarrow\) "Bag of pus"
- Trauma, travel, immunosuppression, diabetes
- Etiologic Agents
  - *Staphylococcus aureus* (77%)
  - *Streptococcus* species (12%)
  - Group A streptococcus
- Not helpful: fever, CK, labs, blood cultures
- Image: MRI > CT > US
- Treatment: surgical drainage + antibiotics

Palpable purpura

- Nonblanching red to purple papules
- Most common differential in the hospital:
  - Small or mixed (small and medium) vessel vasculitis
  - Secondary hemorrhage into papular process
- Always needs a biopsy for H&E, direct immunofluorescence, culture
- Consult dermatology if possible
Consult: 23F, 2 weeks of palpable purpura, calf pain, arthralgias, and abdominal pain

Vasculitis

- Clinical morphology correlates with the size of the affected vessel
  - Small vessel disease (post capillary venules)
    - Urticaria and palpable purpura
  - Small-artery disease
    - Subcutaneous nodules
  - Medium-vessel disease
    - Organ damage, livedo, purpura, mononeuritis multiplex
  - Large-vessel disease
    - Claudication and necrosis
### Palpable Purpura- Leukocytoclastic Vasculitis

- Conditions associated with LCV
  - Idiopathic (45-55%)
  - Infection (15-20%)
  - Inflammatory diseases (15-20%)
  - Medications (10-15%)
  - Malignancy (<5%)

### Palpable Purpura

- Immune complex vasculitis
  - Idiopathic, infection, drug, malignancy
  - IgA vasculitis, Henoch-Schönlein purpura
  - Urticarial vasculitis
  - Hypergammaglobulinemic purpura of Waldenström
  - Bowel bypass syndrome
  - Mixed cryoglobulinemia
  - Connective tissue disease associated

- Pauci-immune complex vasculitis
  - ANCA- associated
    - Microscopic polyangiitis
    - Granulomatosis with polyangiitis
    - Eosinophilic granulomatosis with polyangiitis
  - Levamisole
  - Sweet’s syndrome

### Small Vessel Vasculitis- Evaluation

- H+P, including medications and ROS
- Skin biopsy for H+E, direct immunofluorescence, culture

- Blood culture
- CBC with differential
- Urinalysis with micro
- Creatinine
- Stool guaiac
- Rheumatoid factor
- ASD, throat culture
- Hepatitis B, C serologies
- ANA
- Complement
- ANCA
- Cryoglobulins
- Immunofixation electrophoresis
- PPD or quantiﬁer gold
- Toxicology screen (levamisole)
- Age appropriate malignancy screen

### Palpable Purpura “PLUS”

- Size of vessels is a clinical clue to underlying etiology
- Medium-sized vessel involvement leads to dermal/subcutaneous nodules, ulcerations, livedo, and/or retiform purpura
- Differential diagnosis
  - IgA vasculitis
  - Septic vasculitis
  - ANCA-associated vasculitis
  - Levamisole
  - Mixed cryoglobulinemia
  - Connective tissue disease associated
  - Leukemic vasculitis
  - Polyarteritis nodosa (very rare)
  - More than one process occurring simultaneously
**Ulcers**

- Breakdown of skin to reveal dermis
- Most common differential in the hospital:
  - Venous insufficiency ulcers
  - Pyoderma gangrenosum
  - Viral infections (HSV, CMV)
- Culture for bacteria and virus when suspect infection
- Biopsy may be helpful
  - Send for H&E and culture

**Case**

- 67M - elective saphenous vein phlebectomy
- 4d post op - erythema around wound
- Multiple debridements and broad spectrum antibiotics
- Ulcer continues to expand
- Wound cultures are negative
- Tmax 104, WBC 22
- Transferred to UCSF 3 weeks later

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**Pyoderma Gangrenosum**

- Rapidly progressive (days) ulcerative process
- Begins as small pustule which breaks down forming an ulcer
- Undermined violaceous border
- Expands by small peripheral satellite ulcerations which merge with the central larger ulcer
- Occur anywhere on body
- Triggered by trauma (pathergy)
  - surgical debridement, attempts to graft

**Pyoderma Gangrenosum**

- 50% have no underlying cause
- Associations (50%):
  - Inflammatory bowel disease (1.5%-5% of IBD patients get PG)
  - Rheumatoid arthritis
  - Seronegative arthritis
  - Hematologic abnormalities (AML)
Pyoderma Gangrenosum Treatment

- AVOID DEBRIDEMENT
- Topical therapy:
  - Superpotent steroids
  - Topical tacrolimus
- Systemic therapy:
  - Systemic steroids
  - Cyclosporine or Tacrolimus
  - Mycophenolate mofetil
  - Thalidomide
  - TNF-blockers (Infliximab)
  - Antineutrophil agents: dapsone, colchicine

Vesiculobullous

- Palpable lesions, filled with fluid
- Fluid may be serous, serosanguinous, or hemorrhagic
- Most common differential in the hospital:
  - Autoimmune bullous disorder
  - Drug induced bullous disorder
  - HSV or VZV, localized or disseminated
- Contact dermatitis
- Miliaria crystallina

Consult: rash on arm

- 34M with AML admitted for autologous stem cell transplant
- L arm= 24 hours after PICC placed
- Contact dermatitis, sharp cutoff, itchy

Miliaria Crystallina

http://dermatlas.med.jhmi.edu/derm/index
Herpes Pearls in the Hospital
Diagnostic Tests

- **Direct fluorescent antibody (DFA)**
  - Detects both HSV and VZV
- **PCR**
  - Detects both HSV and VZV
- **Viral culture**
  - HSV grows on culture, VZV does not
- **Skin biopsy**
  - Shows virological changes, but cannot tell HSV from VZV histologically without PCR

Pustules

- Palpable lesions filled with purulent fluid
- Most common differential in the hospital:
  - Bacterial infection
  - Septic emboli
  - Acute generalized/localized exanthematous pustulosis
  - Pustular psoriasis
- Bacterial culture of purulent fluid
- Biopsy often helpful
  - H&E and culture

Consult: 2 days of redness, pustules, neutrophilia

Acute generalized exanthematous pustulosis
Clinical Features

- Acute onset
- Fever, neutrophilia
- Edema (face, hands)
- Additional morphologies
  - Purpura, vesicles, bullae, erythema multiforme-like lesions
- Mucous membrane lesions!
Acute Generalized Exanthematous Pustulosis = Pustular Drug Eruption

- EuroSCAR (97 cases of AGEP, 1009 controls):
  - Macrolides
  - Ampicillin/amoxicillin
  - Quinolones
  - (hydroxy)chloroquine
  - Sulphonamides
  - Terbinafine
  - Diltiazem
  - No infections found
  - Not associated with personal or family history of psoriasis
- Mercury
- Enterovirus infection

Pustular Psoriasis

- Often occurs when known psoriatics are given systemic steroids
- When the steroids are tapered, the psoriasis flares, often with pustules

Inpatient Dermatology

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Infectious Workup at the Bedside

Bulla
- Fluid: bacterial culture
- Base: HSV DFA, culture, VZV DFA
- Edge: HSV DFA, culture, fungal culture

Necrosis
- Necrosis: KOH, bacterial culture, fungal culture

Biopsy
- Bulla
- Necrosis
- H&E
- DIF
- Culture

Culture on tissue for: bacteria, fungi, mycobacteria

Inpatient Dermatology

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- Drug hypersensitivity
- Slow steroid taper
- Late cardiac involvement
- Check TSH monthly for 6 months

Inpatient Dermatology

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- Pyomyositis
- "Cellulitis" not responding to antibiotics
- MRI > CT > US
- I+D
Inpatient Dermatology

1. Morbilliform
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3. **Palpable Purpura**
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Palpable purpura most often indicates a small vessel vasculitis

Consider pyoderma gangrenosum when an ulcer fails to respond to antibiotics and debridement

Inpatient Dermatology

1. Morbilliform
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4. **Ulcers**
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- Contact dermatitis
- Itching
- Erythema
- Sharp cut-off

• Acute generalized exanthematous pustulosis
• Beta lactams, macrolides
• Acute onset
• Rapid resolution
THANK YOU!