Hospital-Based Dermatology: Common and Tough Consult Cases

Lindy P. Fox MD
Associate Professor of Clinical Dermatology
Director, Hospital Consultation Service
University of California, San Francisco

lindy.fox@ucsf.edu

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
Consult: is this a drug rash?

Drug Eruptions: Degrees of Severity

**Simple**
- Morbilliform drug eruption
- Minimal systemic symptoms

**Complex**
- Drug hypersensitivity reaction
- Stevens-Johnson syndrome (SJS)
- Toxic epidermal necrolysis (TEN)
- Systemic involvement
- Potentially 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-REACT
- 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)
Allopurinol hypersensitivity

Anticonvulsant hypersensitivity reaction
DIHS- 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- 1-3 months
- Allopurinol- start mycophenolate when start steroids
  - Treat for a year
- Completely recover, IF the hepatitis resolves
- Check TSH monthly for 6-9 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
Pyomyositis

- Acute primary bacterial infection of skeletal muscle → “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
• ASO, throat culture
• Hepatitis B, C serologies
• ANA
• Complement
• ANCA
• Cryoglobulins
• Immunofixation electrophoresis
• PPD or quantiferon 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
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
    - esp SJS, linear IgA
  - Herpetic
    - HSV or VZV, localized or disseminated
- Contact dermatitis
- Miliaria crystallina

- Look for bacteria and virus when suspect infection
- Biopsy may be helpful
  - Send for H+E and culture and direct immunofluorescence

**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

Varicella
Disseminated HSV
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 viropathic 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

- Patient is toxic appearing
  - Fever, chills
- Can be life threatening
  - High cardiac output state
  - Electrolyte imbalance (Ca^{2+})
  - Respiratory distress
  - Temperature dysregulation

- Treatment
  - Admit
  - Triamcinolone acetonide 0.1% oint under occlusion
  - Acitretin or cyclosporine
Inpatient Dermatology

1. Morbilliform
2. Cellulitic plaques
3. Palpable Purpura
4. Ulcers
5. Vesiculobullous
6. Pustules
Infectious Workup at the Bedside

**Bulla**
- Bulla roof: KOH
- Bulla fluid: bacterial culture
- Bulla base: HSV DFA, culture VZV DFA
- Edge: HSV DFA, culture VZV DFA

**Necrosis**
- Necrosis: KOH, bacterial culture, fungal culture

**Biopsy**

**Bulla**
- H+E
- DIF

**Necrosis**
- H+E culture

Culture on tissue for: bacteria, fungi, mycobacteria
Inpatient Dermatology

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

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

Inpatient Dermatology

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

- Pyomyositis
  - “celluliits” not responding to antibiotics
  - MRI > CT > US
  - I+D
Inpatient Dermatology

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

Palpable purpura most often indicates a small vessel vasculitis.

Inpatient Dermatology

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

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

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

- Contact dermatitis
  - Itching
  - Erythema
  - Sharp cut-off

Inpatient Dermatology

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

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