A Practical Approach to the Unknown Rash

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ROME REGIONAL OSTEOPATHIC MEDICAL EDUCATION

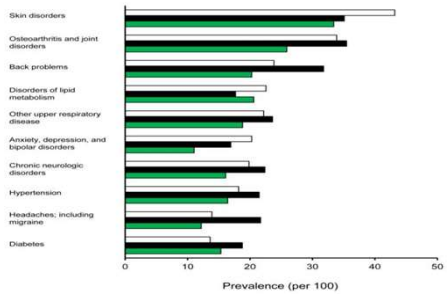
COLORADO SOCIETY OF OSTEOPATHIC MEDICINE

Objectives

- Employ a systematic, algorithmic approach to assess skin rashes
- Identify medical conditions by the morphology, distribution, and appearance of their associated rash
- Review differential diagnoses, treatment, and disposition for patients with medical conditions that present with rashes

I have no conflicts and have nothing to disclose

Skin: A Common Complaint



- Saurer J et al. *Mayo Clin Proc*, 2014

History

- Age
- Duration of Rash
- Assoc Sx
- Travel
- Sick Contacts
- PMH
- Meds
- Menstrual Hx
- Sexual Hx
- Immunizations

Physical Exam

- Vitals
- Sick or not Sick
- Mental Status
- Morphology
  - Erythematous
  - Maculopapular
  - Vesiculo-Bullous
  - Petechial/Purpuric

Distribution

- Central
- Peripheral
- Flexor
- Extensor
- Palms & Soles
- Intertriginous
- Dermatomal
- Mucosal Involvement

Palms & Soles

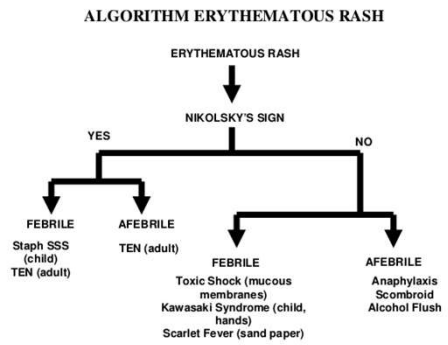
- Dyshidrosis
- Endocarditis
- Erythema Multiforme
- Disseminated GC
- HFM Dz
- Herpes Simplex
- Kawasaki Dz
- RMSF
- Scabies
- Secondary Syphilis
- Toxic Shock Syndrome

Appearance

- Color
- Palpable
- Moist
- Desquamating
- Honey-crusted
- Umbilicated
- Blanching
- Hyper / Hypo-pigmented

Definitions

- **Erythema**: superficial reddening
- **Nikolsky's Sign**: denuding/sloughing of epidermis by light lateral pressure



Erythematous: Case 1

- 7 mo/old M infant brought in by Mother
- Fever, irritability, decreased appetite, rash
- Immuniz: UTD
- VS: 102^{4}-132-22
- + Nikolsky
- Febrile*

SSSS

Staph Scalded Skin Syndrome (1)

- SSSS *S. aureus*
- Peds < 6 y/o (no antibodies)
- Sunburn-like rash→ flaccid bullae
- Spares mucous membranes
- IV Penicillinase-resistant PCN
- IV Flds
- Local wound care

Erythematous: Case 2

- 21 y/o F presents w/ red skin & fever
- Meds & Allergies: none
- PMH: none
- LMP: current
- VS: 101^{8}-124-20 92/62
- neg Nikolsky
- Febrile
- + muc membr*

TOXIC SHOCK SYNDROME

Toxic Shock Syndrome (2)

- TSS *S. aureus or S. pyogenes* toxin
- CDC Criteria
  - Fever, hypotension, rash, + 3 organ systems
- Erythroderma palms & soles→desquamates
- Look for source & remove
- IV PCN-ase PCN
- IV Fluids
- Admit

Erythematous: Case 3

- 42 y/o M presents w/ abrupt rash onset
- Diffuse rash (very pruritic), abd cramps
- Denies EtOH, ate fish 1 h ago
- PMH: neg, NKA
- 98^{6}-108-20-108/66
- neg Nikolsky
- Afebrile*

SCROMBOID

Scromboid Poisoning (3)

- Hx eating fish high in histadine
  - Mackerel family *(Scrombridae)*, mahi-mahi, marlin, tuna
- Histadine → Histamine
- Antihistamines

Kawasaki Disease

- Mucocutaneous Lymph Node Syndrome
- Fever + 4 of 5:
  - Bilat conjunctival inject, Oral mucosa,
  - Erythematous rash, Desquam Hands & Feet,
  - Cervical nodes
- Admit, IVIG, ASA, Steroids

Allergic Reaction

- Urticaria
- Epinephrine
- Antihistamines
- Steroids

Scarlet Fever

- Scarlatina
- Sandpaper-like rash
- Strawberry tongue
- Pharyngitis/Tonsillitis
- PCN

Alcohol Flushing

- Hx EtOH ingestion, common in Asians
  - Genetic mutation of Acetaldehyde Dehydrogenase
  - Acetaldehyde accumulates
- Hx prior episodes
- Face, neck; no pruritus
- HA, N/V, Tachycardia?
- Vitals normal, afebrile
- Support, self-limited

Alcohol Flushing

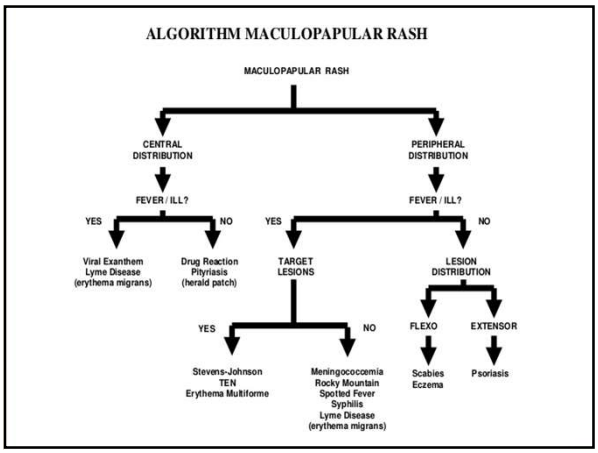
- Normally:
  - Alcohol→Acetaldehyde by Alcohol Dehydrogenase (ADH)
  - ADH→Acetic Acid by Acetaldehyde Dehydrogenase (ALDH)
  - Acetic Acid→H_2O + CO_2
- Mutated ALDH2 inhibits conversion
- Therefore Acetaldehyde accumulates
- (Similar to Disulfuram)

Redman Syndrome

- IV Vancomycin
- Flushing & Erythema
- Histamine release
- Face most common
- Tachycardia
- Hypotension
- Stop/Slow infusion
- Antihistamines

Definitions

- **Macule**: non-palpable, varied shapes, sizes, & colors
- **Papule**: solid, elevated < 5 mm



Maculopapular: Case 1

- 6 y/o M w/ rash brought in by Mother; Started on face & spread to trunk & extr
- Prior to rash: fever, cough, rhinorrhea
- Mother does not believe in Immunizations
- + Cervical nodes
- Central
- Fever*

VIRAL EXANTHUM
RUBELLA

Viral Exanthem (1)

- Rubella (3-Day, German Measles)
  - Rash day 1 Face → spreads centrally
  - Low-grade fever, URI Sx
  - Lymphadenopathy
- Rubeola (Hard Measles)
  - **C**ough, **C**oyrza, **C**onjunctivitis
  - Rash day 3-7 Head→spreads
  - Complications: Pneumonia, Encephalitis

Viral Exanthem

- Fifth Dz (Erythema Infectiosum)
  - Slapped Cheek
  - Mild viral Sx
  - Parvovirus B 19
- Roseola (Infantum)
  - Sudden high fever →defervescence + rash: trunk, arms, neck
  - Well-appearing child
  - HHV-6

Numbered Skin Rashes 1-6

• First	Rubeola
• Second	Scarlatina
• Third	Rubella
• Fourth	Dukes' Dx (SSSS?)
• Fifth	Erythema Infectiosum
• Sixth	Roseola

Maculopapular: Case 2

- 33 y/o F c/o rash
- Began on hands
- Spread all over incl muc membranes
- Appears quite ill
- VS: 102-128-24 90/62
- PMH: TMP/Sulfa for UTI
- Peripheral, Fever
- Target Lesions*

TEN

Toxic Epidermal Necrolysis (2)

- SJS →TEN continuum
  - TEN: > 30% BSA
- Target lesions
- Mucous membranes
- Drug Rxn; Viral
- D/C offending source
- Wound Care, IV flds, Steroids
- Admit to Burn Center
- (also Erythematous)

Stevens-Johnson Syndrome

- SJS →TEN continuum
  - SJS: < 10% BSA
- Immune disorder
- Target lesions
- Mucous membranes
- Drugs, Infection, Malig
- Tx underlying cause
- Supportive care, Admit

Maculopapular: Case 3

- 19 y/o student w/ rash
- He c/o HA & fever
- Appears generally ill
- PMH: neg, no meds, Immuniz UTD
- Soc Hx: Recently returned from a NC camping trip
- VS: 102-112-20 110/64
- Peripheral, Fever, no Target Lesions*

RMSF

Rocky Mountain Spotted Fever (3)

- Black Measles
- *R. rikettsii*
- *D. andersoni, variabilis*
- Endemic area
- HA, arthralgias
- 3-5 days later rash appears
  - Flexor wrists, ankles, palms, soles
- (Macules → Petechiae / Purpura)
- Doxycycline

Pityriasis Rosea

- Herald Patch
- Christmas Tree pattern on trunk
- +/- pruritus
- Young adults, lasts months, not contagious
- Etiology: HHV 6 or 7?
- UV light
- Sx care, antihistamines

Syphilis

- Secondary Syphilis
- *T. pallidum*
- "Great Masquerader"
- 3-6 wks after primary lesion
- Trunk →Flexor extremities (palms & soles)
- Painless, no itching
- Fever, adenopathy, HA, malaise
- VDRL, RPR (screening)
- FTA-ABS, EIA (confirmatory)
- Tx same as Primary

Lyme Disease

- *Borrelia burgdorferi*
- *Ixodes scapularis*
- 3 Stages
  - 1.Localized: Flu Sx, Rash (Erythema Migrans)
  - 2. Early Dissem: Neuro Sx (Bells)
  - 3. Late Dissem: Arthritis
- Doxycycline

Drug Reaction

- History
- Not very sick
- ID Drug & DC
- Amoxicillin common
- Allergic Rxn Tx

Erythema Multiforme

- EM Minor
  - Skin: Target lesions peripheral body < 10% BSA
- EM Major
  - Skin + muc membr
- Distinct from SJS / TEN
- IgM Hypersensitivity
- D/C drug
- Tx underlying illness
- Topical steroids
- Supportive care

Scabies

- *Sarcoptes scabiei* < 0.5 mm
- Excoriated Flexor surfaces, Web spaces
- Female burrows to live & deposit eggs
- Allergic Rxn, Pruritus worse at night
- Sx 10-30 days post exposure
- Skin scraping
- Permethrin, Ivermectin
- Steroids, Antihistamines

Eczema

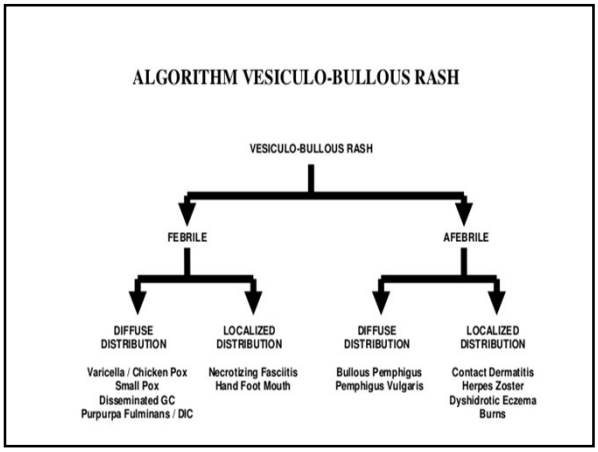
- Thickened lichenified skin
- Atopic Dermatitis, other atopic Sx
- Asthma, Hay Fever
- Flexor surfaces
- Moisturizing cream
- Steroids for flares

Psoriasis

- Genetic autoimmune disorder
- Extensor surfaces
- Koebner phenomenon
- Steroids, MTX, UV Light
- Immunotherapy (MABs)

Definitions

- **Vesicle**: elevated fluid-filled, < 5 mm
- **Bulla**: > 5 mm



Vesiculo-Bullous: Case 1

- 4 y/o M flu-like Sx for a couple of days, now breaking out all over, started on his trunk
- VS: 101^{6}-110-22 98/68
- Behind on immunizations
- Febrile
- Diffuse
- Different stages*

VARICELLA

Varicella (1)

- Chicken Pox: VZV
- Contagious 1-2 days before rash
- Lesions begin face & trunk→extr
- Excoriated lesions in multiple stages
  - Macules→papules→vesicles→pustules→ umbilication→scabs
- Isolate, Acyclovir?
- Symptomatic Tx
- Antipyretics (No ASA)

Vesicular-Bullous: Case 2

- 24 y/o M c/o w/ itchy rash on abdomen
- No other complaints
- Noticed a few days after getting new belt
- NKA
- Vitals normal
- Afebrile
- Localized
- Location*

CONTACT DERMATITIS

Contact Dermatitis (2)

- Jewelry (Nickel), cosmetics, plants
- Pattern, Location
- D/C offending item
- Symptomatic Tx, Antihistamines
- Steroids

Vesiculo-Bullous: Case 3

- 55 y/o F presents again w/ blistering rash
- Diffuse lesions also involving muc membr
- VS: 98^{6}-100-20 110/70
- Afebrile*

PEMPHIGUS

Pemphigus Vulgaris (3)

- Involves mucous membranes
- Chronic Dz
- Females 2:1 Males
- + Nikolsky
- Wound care, support
- Steroids, IVIG
- Admit?

Pemphigoid

- AKA Bullous Pemphigus
- Autoimmune Type II IgG hypersensitivity
- Less aggressive form
- neg Nikolsky
- Flexor surfaces
- Geriatric Pts
- Steroids, MTX

Disseminated Gonococcemia

- Arthritis-dermatitis Syndrome
- When GC not Tx
- Sparse painless pustules & purple vesicles
- Peripheral
- Septic Arthritis, Tenosynovitis, Dermatitis, Urethritis, Cervicitis
- Ceftriaxone + Azithromycin
- (also Petechial / Purpuric)

Purpura Fulminans / DIC

- DIC / Thrombotic disorder
- Defect in protein C anticoag pathway
- Hemorrhagic necrotic lesions
- (Also Petechial / Purpuric)
- Tx underlying cause, FFP, Platelet packs
- Admit

Necrotizing Fasciitis

- "Flesh-eating Bacteria"
- **P**ain **O**ut **O**f **P**roportion
- May resemble cellulitis early
- Surgical Emergency
- Debridement
- Polymicrobial, MRSA
  - *C.diff, Strep, Bacteroides, Vibrio*
- Broad spectrum Abx
- IV Flds, support
- HBO?

Hand, Foot and Mouth Disease

- Coxsackie Virus A-16
- Peds, fever before rash
- Vesicles on palms, soles, then mouth (2/3)
- Self-limited
- Symptomatic Tx
- Good hand hygiene

Herpes Zoster

- Shingles
- Hx Varicella
- VZV Reactivated
- Dorsal root ganglion
- Prodrome Sx 2-3 days
- Acyclovir, Steroids?
- Symptomatic Tx
- Vaccines

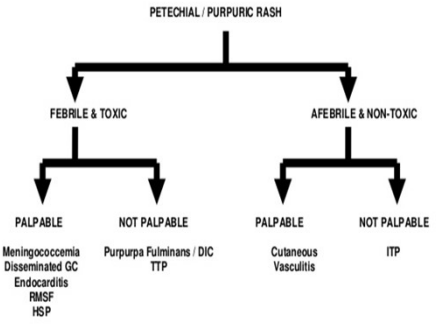
Dyshidrosis

- Dyshidrotic Eczema
- Palms & Soles
- Small clusters
- Atopic Sx
- Stress, Seasonal allergies
- Topical Steroids

Definitions

- **Petechae**: pinpoint flat hemorrhagic circular lesions < 3 mm; don't blanche w/ pressure
- **Purpura**: hemorrhagic patches > 3 mm, may be palpable
- **Ecchymosis**: > 10 mm

ALGORITHM PETECHIAL/PURPURIC RASH



Petechial / Purpuric: Case 1

- 20 y/o college student brought in by her boyfriend w/ 2 day Hx of HA, fever, & gradually worsening confusion.
- VS: 104-120-28 98/60
- While waiting in the clinic, she develops this rash
- Lives in dorm w/ roommates)
- Fever
- Palpable lesions
- (Maculopapular)*

MENINGOCOCCEMIA

Meningococcemia (1)

- *N. meningitidis*
- Ill-appearing: fever, HA, stiff neck
- Petechial rash starts 2-4 days post exposure: chest & extr
- Meningitis, Sepsis
- Isolation, LP
- Ceftriaxone, Tx contacts
- Admit

Petechial / Purpuric: Case 2

- 30 y/o F c/o rash on legs
- PMH: neg; no meds; NKA
- No sick contacts
- 101^2-120-24 98/50
- Febrile
- Lesions non-palpable
- Platelet count = 900*

TTP

Thrombotic Thrombocytopenic Purpura (2)

- TTP Acute onset
- Pentad of Clinical Features
  - Fever, Low Platelets, Hemolytic Anemia, Neuro Sx, AKI
- Platelets aggregate/consumed
- Tx underlying cause
- Plasmapheresis, Transfusions
- Do not give Platelets!
- Splenectomy?

Petechial / Purpuric: Case 3

- 37 y/o F presents w/ rash to lower extr
- Started 2 days ago
- PMH: Lupus; no meds
- Soc Hx: no recent travel or contacts
- VS: 98^{8}-88-16
- 128/80
- Afebrile
- Palpable*

VASCULITIS

Cutaneous Vasculitis (3)

- Many types, often immune mediated
  - Kawasaki's, Behcet's, Buerger's, Giant Cell, Polyarteritis Nodosa, Takayasu's Arteritis
- Tx underlying disease process
- Steroids
- Anti-inflam agents

Endocarditis

- SBE
- Osler's Nodes
  - Tender purpuric palpable nodules on fingers & toes
- Janeway Lesions
  - Painless flat papules on palms & soles
- New or changing Murmur
- Fever
- Echo
- + Blood Cultures
- IV Vanc + Gent

Henoch-Schonlein Purpura

- IgA vasculitis
- Sm vessels bleed
- Lower extremities
- Peds ages 2-6
- Arthralgias
- Abd pain, GI Bleed
- ASx hematuria
- Supportive Tx, Steroids

Immune Thrombocytopenic Purpura

- ITP (prev Idiopathic)
- Lower extremities
- Low platelet count
- Normal bone marrow
- Peds: acute; Adults: chronic
- Platelet transfusion if count < 5000/mm^3 or active bleeding
- Steroids, IVIG
- Splenectomy?

Summary

- Pertinent info to ID a rash:
  - VS; Sick or Not Sick
  - Morphology
  - Distribution
  - Appearance
- With this information, the diff Dx can usually be narrowed down to just a few choices!
- Minimal additional Hx and a few more specific details should give the final Dx!!