When it’s not just a virus...
Pediatric Dermatology in the
Emergency Department

Jillian Stevens Savage DO, FAAP
Pediatric Emergency Medicine Attending
Clinical Assistant Professor of Pediatrics
Sidney Kimmel Medical College at Thomas Jefferson University
Nemours/A.I. duPont Hospital for Children
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Objectives

• Distinguish benign vs serious dermatologic conditions
• Formulate initial treatment plans for life threatening dermatologic emergencies
• Evaluate and apply management principles to 16 fascinating cases seen in the emergency department
Case 1
Case 1
Make the diagnosis!

A. Impetigo
B. Stevens Johnson Syndrome (SJS)
C. Staphylococcal scalded skin syndrome (SSSS)
D. Eczema herpeticum
E. Herpetic gingivostomatitis
Staphylococcal Scalded Skin Syndrome

• Clinical manifestations
  • Malaise, fever, irritability
  • Skin sensitivity, erythroderma, toxic appearance, exfoliative phase
  • +Nikolsky’s sign
  • Lack of mucous membrane involvement
    • Occasional purulent eye discharge without conjunctival injection
• Skin clearing within 12-14 days
Staphylococcal Scalded Skin Syndrome

• Pathophysiology
  • Release of 2 exotoxins from *S. aureus* causing cleavage of the stratum granulosum

• Epidemiology
  • <6 years, starts with mild cold symptoms
Staphylococcal Scalded Skin Syndrome

• ED management
  • Fluid resuscitation as needed, evaluate for electrolyte imbalance
  • IV antibiotics likely ameliorate the course
    • Cefazolin or Oxacillin, consider additional Clindamycin for its effects on bacterial ribosome metabolism
  • Early distinction from SJS/TEN (Toxic Epidermal Necrolysis)
    • Stop offending agent, consider steroids, consider burn unit
  • Avoid steroids
  • Admission <1 year and/or toxic appearance and/or significant skin involvement
  • Skin care to prevent secondary skin infection
  • Pain control
Stevens Johnson Syndrome

- Pathophysiology
  - Immune mediated hypersensitivity to exposure

- Clinical manifestations
  - Extensive erythematous macules with central clearing
  - Extensive mucosal involvement
  - Fever, chills, malaise

- Offending agents
  - Drug (sulfonamides, phenytoin)
  - Food (shellfish, nuts)
  - Infections (*Mycoplasma, HSV*)

- ED management
  - Supportive, consider burn unit, discontinue offending agent, pain control, +/- IVIG and steroids
Eczema Herpeticum
Herpetic gingivostomatitis
Case 2
Case 2
Make the diagnosis!

A. Insect bites
B. Acne vulgaris
C. Herpetic gladiatorum
D. Gianotti-Crosti Syndrome
E. Eczema
Herpetic gladiatorum

• Clinical manifestations
  • Erythematous pustules on exposed skin

• Etiology
  • HSV-1 infection from contaminated surfaces

• Epidemiology
  • Common in adolescence, 2-20 days after exposure
  • Common in wrestlers

• ED management
  • Oral acyclovir, usually heal well without scarring, consider pretreatment prior to exposure
Case 3
Case 3
Case 3
Make the diagnosis!

A. Partial thickness burn
B. Nickel allergy
C. Systemic HSV-1
D. Impetigo
E. Eczema herpeticum
Impetigo

• Description
  • Bullous (fluid filled blisters) vs. non-bullous (vesicopustule with honey colored crust)

• Etiology
  • Contagious superficial infection by *s. aureus +/- GAS*
Impetigo

• Epidemiology
  • 2-5 years, generally self-limiting

• ED management
  • Antibacterial soap cleanse TID
  • Topical mupirocin TID
  • Cephalexin PO x 7-10 days for multiple sites, >1 family member, consider MRSA coverage
Ecthyma
Ecchyma

• Clinical manifestations
  • Involves deeper layers of the skin (entire thickness of the epidermis to upper dermis), “punched-out” lesion

• Etiology
  • *S. aureus* +/- GAS

• Epidemiology
  • All ages common in summer, follows minor trauma

• ED management:
  • Antibacterial soap cleanse TID, topical mupirocin TID
  • Cephalexin PO x 7-10 days
Case 4
What is your treatment of choice?

A. Oral Acyclovir
B. Topical Mupirocin
C. Cephalexin
D. Permethrin
E. Lindane
Scabies

• Clinical manifestations
  • Intensely pruritic, erythematous, generalized papular eruption
  • Often interdigital, inguinal

• Etiology
  • Contagious skin infestation caused by sarcoptes scabiei

• Epidemiology
  • All ages

• ED management
  • Permethrin 5% cream & treat contacts
  • oral antihistamines as needed for pruritis
Case 5
Which statement is correct?

A. Approximately 50% of cases are idiopathic
B. Rash persists in the same body region
C. Treatment should include antivirals
D. Close contacts should receive chemoprophylaxis
E. Condition is IgG mediated
Beware of Mimickry
Acute Urticaria

• Clinical manifestations
  • Pink, erythematous, raised, smooth, serpiginous, blanching, varied sizes, fleeting, intensely pruritic

• Etiology
  • Type 1 hypersensitivity reaction to exposure

• ED management
  • Rule out anaphylaxis
  • Identify cause if possible
  • Antihistamines are mainstay
Anaphylaxis

- Type I IgE-mediated hypersensitivity reaction involving multiple organ systems
- 80% have predictable uniphasic course, 20% are biphasic, up to 8 hours after recovery
Anaphylaxis ED management

• ED management:
  • ABCs, monitor, IV, NS bolus
  • IM epinephrine 0.01mg/kg (1:1000)
  • Racemic epinephrine/Albuterol prn
  • IV H1 blockade (Benadryl 1mg/kg)
  • IV H2 blockade (Zantac 1mg/kg)
  • IV Steroid (Solumedrol 2mg/kg/dose)
  • Observation
    • Mild 6-8 hours
    • Moderate-Severe 24-48 hours
Case 6
Case 6
Make the diagnosis!

A. Eczema herpeticum
B. Varicella
C. Papular urticarial
D. Small pox
E. Acne vulgaris
Varicella (Chicken Pox)

• Clinical manifestations
  • Fever, malaise, pharyngitis, fussiness
  • Vesicular rash with centripetal distribution
  • Varying stages (macule, papule, vesicle, pustule, crusting)
  • Highly contagious

• Etiology
  • Varicella Zoster Virus
Varicella

• Differential diagnosis
  • Herpes Zoster, Coxsackie virus, drug eruptions, eczema herpeticum, bullous impetigo, measles, small pox, papular urticaria

• ED management
  • Largely supportive, consider Acyclovir 80mg/kg/day divided QID x 5 days, colloidal oatmeal baths, Benadryl, avoidance of Salicylates

• Complications
  • Pneumonia, encephalitis, hepatitis
What is Reye’s Syndrome?

• Reversible encephalopathy accompanied by fatty degeneration of the liver
• 1970s-400-600 cases/year
  • Linked to salicylates
  • Currently-2 cases per year
• Antecedent viral illness (Influenza) followed by vomiting, hyperventilation, irritability, confusion, stupor, encephalopathy
• ED management: ICU admission, largely supportive
• Complications: Increased cerebral edema/ICP
Varicella vs Small Pox
Case 7
Your differential includes all of the following except?

A. Henoch-Schonlein purpura (HSP)
B. Meningococcemia
C. Non accidental trauma
D. Idiopathic thrombocytopenia purpura
E. Anaphylaxis
Your initial management includes all of the following except?

A. IV fluid resuscitation
B. Broad spectrum antibiotics
C. Social work/Division of family services consult
D. Blood, urine and spinal cultures
E. Empiric treatment of close contacts
Purpura fulminans
Meningococcemia

• Clinical manifestations
  • Fever to fulminant septic shock and death within hours
  • Diffuse petechiae/purpura

• DDx
  • RMSF, HSP, measles, ITP, abuse, drug reaction, bacterial endocarditis, HUS

• Epidemiology
  • <5 years
  • 1-10 day incubation period
Meningococcemia

• ED management
  • Prompt recognition, stabilization, fluid resuscitation
  • Blood, urine and CSF cultures
  • Broad spectrum antibiotics

• Post ED-management
  • Chemoprophylaxis for close contacts (household/childcare)
    • Rifampin, IM Ceftriaxone, Ciprofloxacin
Idiopathic Thrombocytopenia
Case 8
Case 8
Case 8
What is the underlying diagnosis

A. Tinea versicolor
B. Tuberous Sclerosis
C. Neurofibromatosis
D. McCune Albright Syndrome
E. Melanoma
NF-1 von Recklinghausen disease
Neurofibromatosis

• Clinical manifestations
  • Café au lait spots, axillary freckling, plexiform neuromas, neurofibromas
  • Lisch nodules

• Inheritance
  • Autosomal dominant, 50% sporadic
All of the following are associated findings with this rash EXCEPT?

A. Arthritis
B. Normal platelets
C. Renal disease
D. Abdominal pain
E. Coronary Artery Disease
Henoch-Schonlein Purpura

- **Clinical manifestations**
  - Nonthrombocytopenic palpable purpura buttocks/lower extremities
  - Arthritis, bowel angina, renal abnormalities, testicular pain/swelling/rash

- **Etiology**
  - Small vessel leukocytoclastic vasculitis via IgA mediated immune complex deposition

- **Epidemiology**
  - <15 years, predominant age 4-7, M:F 1.8:1
  - Typically mild, self resolves within 1 month
Henoch-Schonlein Purpura

- **DDx**
  - acute hemorrhagic edema of infancy, ITP, meningococcemia, malignancy

- **ED management/evaluation**
  - CBC, BMP BP, UA, PT/PTT, GU exam

- **Treatment**
  - Supportive, hydration, pain relief, bowel rest, close PCP follow up
  - Consider steroids in severe disease

- **Complications**
  - Recurrence up to 33%
  - Surgical emergencies (intussusception/bowel perforation)
  - Nephritic and/or nephrotic syndrome, hypertension
Case 10
Name that diagnosis!

A. Pustular melanosis
B. Neonatal herpes simplex virus
C. Eczema
D. Erythema multiforme
E. Gianotti-Crosti Syndrome
Neonatal HSV

• Clinical manifestations
  • Multiple grouped vesicular lesions
  • Asymptomatic to full blown sepsis

• Etiology
  • HSV-2
  • Age: 2-28 days

• ED management
  • ABCs
  • Full sepsis work up
  • Tissue sample
  • IV Acyclovir and admission
Pustular melanosis
Erythema Multiforme
Gianotti Crosti papular acrodermatitis
Case 11
Make the diagnosis!

A. Pustular melanosis
B. Epidermolysis bullosa
C. Bullous impetigo
D. Congenital herpes simplex virus
E. Varicella
Epidermolysis Bullosa (EB)

- Inherited mechanobullous disorders
- 3 types, over 30 subtypes/variants
  - Simplex (AD)
    - Infancy, superficial blisters in pressure areas, improves throughout adolescence
  - Junctional (AR)
    - At birth, spontaneous lesions at junction of epidermis and dermis, can be fatal
  - Dystrophic (AD/AR)
    - Cleavage is deep in upper dermis, leads to scarring, mucous membrane/nail involvement, varied age presentation
- Treatment: Supportive treatment, bone marrow transplant, gene repair therapy
Case 12
Case 12
Which statement is incorrect about this rash?

A. Association with thrombocytopenia
B. Association with hyponatremia
C. Drug of choice is Amoxicillin for patients <8 years
D. Presumptive treatment should be initiated regardless of titers
E. Infectious agent is rickettsia rickettsii
Rocky Mountain Spotted Fever

• Clinical manifestations
  • Fever, malaise, headache, myalgias, conjunctivitis, vomiting, abdominal pain
  • Day 3-4-maculopapular rash on extremities
  • Day 5-6-evolves to petechial then purpuric rash, spreads centrally

• Etiology
  • *Rickettsia rickettsii* transmitted by bite of dog tick

• Epidemiology
  • All ages, now more dispersed across United States
  • Mortality of 5% with treatment, 13-40% without treatment
Rocky Mountain Spotted Fever

• Classic laboratory findings
  • Thrombocytopenia, hyponatremia, elevated liver function tests

• ED management
  • ABCs, fluid resuscitation, consider ICU, broad spectrum antibiotics + Doxycycline regardless of age, PCR

• Complications
  • Vascular collapse due to overwhelming vasculitis, shock, seizures
Case 13
What is the treatment of choice for this condition?

A. Amoxicillin
B. Doxycycline
C. Topical antifungal
D. Reassurance
Human Bite

- Epidemiology
  - 1/600 pediatric ED visits, <10 years
  - 15% develop infection
  - Polymicrobial: *S. viridans*, *S. aureus*, Anaerobes, *Eikenella*

- ED management
  - Cleansing, debridement, exploration and repair, review tetanus immunization history, close follow up, antibiotics are controversial, close PCP follow up
  - Ensure size of bite is appropriate for pediatric mouth
Case 14
Which statement is INCORRECT about this lesion?

A. No further testing required
B. Titers are required for diagnosis
C. May be treated with oral doxycycline
D. Associated with borrelia burgdorferi
E. Named after a city in Connecticut in 1975
Erythema Migrans

• Clinical manifestations
  • small, red, indurated papule at site of bite, later expands to a target like lesion over days/weeks

• Etiology
  • transmitted via deer ticks
  • Spirochete *borrelia burgdorferi*

• Epidemiology
  • Bimodal age distribution- 5-8 years, 55-59 years

• ED management
  • <8, Amoxicillin BID x 14-21 days
  • >8, Doxycycline BID x 14-21 days
  • PCN allergy-Cefuroxime/Azithromycin
Lyme Disease

• Early disease
  • Localized erythema migrans rash (small red indurated papule, spreads to central clearing)
  • Fever, regional lymphadenopathy, malaise

• Early disseminated
  • Large joint oligoarthritis, cranial neuritis, peripheral radiculoneuropathy, meningitis, cardiac involvement (conduction abnormalities, pancarditis)

• Late disease
  • Acrodermatitis chronica atrophicans, Chronic oligoarthritis, peripheral neuropathies
Case 15
Make the diagnosis!

A. Kawasaki Syndrome
B. Stevens Johnson Syndrome
C. Chemical burn
D. Lymphatic malformation
E. Geographic tongue
Microcystic Lymphatic Malformation

• Clinical manifestations
  • Swelling found in head/neck, risk of airway compromise

• Etiology
  • Unknown, uncommon congenital anomaly

• Epidemiology
  • Found in early childhood
  • 1/5000 births

• ED management
  • Manage airway, antibiotics, steroids
  • ENT follow up for laser/sclerotherapy, surgical excision/debulking
Geographic tongue
Case 16
Case 16
If you were to remove a scale from this rash and it bleeds, what would you call this classic sign?

A. Nikolsky
B. Hutchinson
C. Koebner phenomenon
D. Auspitz
Psoriasis

- Clinical manifestations
  - Papulosquamous lesions with silvery scales on scalp, perineum, extensor surfaces

- Epidemiology
  - Varied ages, Female:Male ratio 2:1

- Treatment
  - Topical steroids, Vitamin A/D, emollients, severe cases require Methotrexate or immunomodulators

- Subtypes
  - Guttate
    - Most common, check ASO titer, drop like lesions
  - Erythrodermic
    - Rare, abrupt/severe desquamation
  - Pustular
    - Rare
Take home pearls

• Always thoroughly examine the skin of a patient with new onset fever
• Have respect for fever and petechial rash
  • If ill appearing, push broad spectrum antibiotics early
• Always thoroughly examine the skin of any neonate presenting to the Emergency Department
• Despite our geographic location, Rocky Mountain Spotted Fever should remain on your differential
  • Early suspicion and treatment limits mortality
• If your patient is a wrestler, think herpetic gladiatorum
References


Thank you!