Disclosures

► Speaker Bureau:
  • Sanofi-Pasteur, Takeda, Merck, Boehringer

Objectives

■ Upon completion of this lecture, the participant will:
  1. Identify various pediatric dermatology conditions
  2. Discuss those dermatology conditions that require an immediate referral
  3. Develop an appropriate plan for evaluation, treatment, and follow-up of the various lesions
Fifth’s Disease (Erythema Infectiosum)

- Human Parvovirus B19
  - Occurs in epidemics
  - Occurs year round: Peak incidence is late winter and early spring
- Most common in individuals between 5-15 years of age
  - Period of communicability believed to be from exposure to outbreak of rash
  - Incubation period: 5-10 days
  - Can cause harm to pregnant women and individuals who are immunocompromised

Fifth’s Disease (Erythema Infectiosum)

- Low grade temp, malaise, sore throat
  - May occur but are less common
- 3 distinct phases
  - Facial redness for up to 4 days
  - Fishnet-like rash within 2 days after facial redness
  - Fever, itching, and petechiae
    - Petechiae stop abruptly at the wrists and ankles
      - Hands and feet only

Fifth’s Disease (Erythema Infectiosum)

- Physical Examination Findings
  - Low grade temperature
  - Erythematous cheeks
    - Nontender and well-defined borders
  - Netlike rash
    - Erythematous lesions with peripheral white rims
    - Rash-remits and recurs over 2 week period
  - Petechiae on hands and feet
Fifth’s Disease

Diagnosis/Plan
- Parvovirus IgM and IgG
  - IgM= Miserable and is present in the blood from the onset up to 6 months
  - IgG= Gone and is present beginning at day 8 of infection and lasts for a lifetime
- CBC- May show a decreased wbc count

Fifth’s Disease (Erythema Infectiosum)

- Was contagious before rash appeared therefore, no isolation needed
  - Spread via respiratory droplets
  - Symptomatic treatment
  - Patient education- i.e. contagion, handwashing
  - Can cause aplastic crisis in individuals with hemolytic anemias
  - Concern regarding: miscarriage, fetal hydrops
  - Adults: arthralgias
Hand, Foot, and Mouth Disease
(Coxsackie Virus)
- Caused by the coxsackie virus A16
- Most common in children
- 2-6 day incubation period
- Occurs most often in late summer-early fall
- Symptoms
  - Low grade fever, sore throat, and generalized malaise
  - Last for 1-2 days and precede the skin lesions
  - 20% of children will experience lymphadenopathy

CDC.gov
- From November 7, 2011, to February 29, 2012, CDC received reports of 63 persons with signs and symptoms of HFMD or with fever and atypical rash in Alabama (38 cases), California (seven), Connecticut (one), and Nevada (17).
- Coxsackievirus A6 (CVA6) was detected in 25 (74%) of those 34 patients
- Rash and fever were more severe, and hospitalization was more common than with typical HFMD.
- Signs of HFMD included fever (48 patients [76%]); rash on the hands or feet, or in the mouth (42 [67%]); and rash on the arms or legs (29 [46%]), face (26 [41%]), buttocks (22 [35%]), and trunk (12 [19%]).
- Of 46 patients with rash variables reported, the rash typically was maculopapular; vesicles were reported in 32 (70%) patients.
- Of the 63 patients, 51 (81%) sought care from a clinician, and 12 (19%) were hospitalized. Reasons for hospitalization varied and included dehydration and/or severe pain.
- No deaths were reported.

Hand, Foot, and Mouth Disease
(Coxsackie Virus)
- Physical Examination Findings
  - Oral lesions are usually the first to appear
    - 90% will have
    - Look like canker sores; yellow ulcers with red halos
    - Small and not too painful
    - Within 24 hours, lesions appear on the hands and feet
      - 3-7 mm, red, flat, macular lesions that rapidly become pale, white and oval with a surrounding red halo
      - Resolve within 7 days
Hand, Foot, and Mouth Disease (Coxsackie Virus)

- Physical Examination Findings
  - Hand/feet lesions
    - As they evolve – may evolve to form small thick gray vesicles on a red base
    - May feel like slivers or be itchy
Hand, Foot, and Mouth Disease (Coxsackie Virus)

Plan
- Diagnostic: None
- Therapeutic
  - Acetaminophen/ibuprofen
  - Warm baths
  - Aluminum hydroxide/lidocaine/diphenhydramine
  - Diphenhydramine/aluminum hydroxide

Hand, Foot, and Mouth Disease (Coxsackie Virus)

Plan
- Educational
  - Very contagious (2d before -2 days after eruption begins)
  - Entire illness usually lasts from 2 days – 1 week
  - Reassurance
  - No scarring

Pityriasis Rosea

Etiology
- Common, benign skin eruption
- Etiology unknown but believed to be viral
- Small epidemics occur at frat houses and military bases
- Females more frequently affected
- 75% occur in individuals between 10 and 35; highest incidence: adolescents
- 2% have a recurrence
- Most common during winter months
Pityriasis Rosea

- Symptoms
  - Rash initially begins as a herald patch
  - Often mistaken for ringworm
  - 29% have a recent history of a viral infection
  - Asymptomatic, salmon colored, slightly itchy rash

- Signs
  - Prodrome of malaise, sore throat, and fever may precede
  - Herald patch: 2-10cm oval-round lesion appears first
  - Most common location is the trunk or proximal extremities
Pityriasis Rosea

- Signs
  - Eruptive phase
    - Small lesions appear over a period of 1-2 weeks
    - Fine, wrinkled scale
    - Symmetric
    - Along skin lines
    - Looks like a drooping pine tree
    - Few lesions-hundreds
    - Lesions are longest in horizontal dimension

- Signs (continued)
  - 7-14 days after the herald patch
  - Lesions are on the trunk and proximal extremities
  - Can also be on the face

- Diagnosis
  - History and physical examination

- Plan
  - Diagnostic
    - Can do a punch biopsy if etiology uncertain
      - Pathology is often nondiagnostic
      - Report: spongiosis and perivascular round cell infiltrate
    - Consider an RPR to rule-out syphilis
**Pityriasis Rosea**

- Plan
  - Therapeutic
    - Antihistamine
    - Topical steroids
    - Short course of steroids although, may not respond
    - Sun exposure
    - Moisturize
  - Educational
    - Benign condition that will resolve on own
      - May take 3 months to completely resolve
    - No known effects on the pregnant woman
    - Reassurance

**Impetigo**

- Contagious, superficial skin infection
- Caused by staphylococci or streptococci
  - Staph is the most common cause
  - Makes entrance through small cut or abrasion
  - Resides frequently in the nasopharynx
- Spread by contact
- More common in children, particularly on the nose, mouth, limbs
  - Self-limiting but if untreated may last weeks to months

**Impetigo**

- Symptoms:
  - Rash that will not go away
  - Begins as a small area and then increases in size
  - Yellow, crusted draining lesions
- Physical Examination Findings
  - Small vesicle that erupts and becomes yellow-brown
  - Initially, looks like an inner tube
  - Crust appears and if removed, is bright red and inflamed
Impetigo

- Physical Examination Findings
  - 2-8 cm in size
- Diagnosis
  - Diagnostic:
    - Culture – Must absolutely consider MRSA
  - Therapeutic:
    - Bactroban vs. Altabax
    - 1st generation cephalosporin vs. TMP/SMX
    - Let’s discuss MRSA

Impetigo

- Educational
  - Good handwashing and hygiene
  - No school/daycare for 24-48 hours
  - Wash sheets and pillowcases
  - Monitor for serious sequelae

CA - MRSA
CA-MRSA

Current estimates:
- 25 – 30% of people carry colonies of staphylococci in their noses
- < 2% are colonized with MRSA

IDSA Published Information

Microbiology of Purulent SSTIs

- MSSA 17%
- MRSA 59%
- Other 4%
- S. aureus 4%
- Unknown 5%
- Other 5%

Source: Wright, 2015
CA-MRSA
- Most CA-MRSA infections are not usually severe or associated with deaths although the CA strains are believed to be more virulent than the hospital strains
- However, current yearly estimates are:
  - 95K invasive infections
  - 19K deaths

CA - MRSA
- mecA gene
  - This is where the resistance originates with MRSA
  - PCN can't bind at its target
- A lot of cross resistance to beta lactam antibiotics: PCN and cephalosporins particularly in the USA300 strain which is the CA-MRSA strain

CA-MRSA
- 2002 – handful of cases of the bacterium which is resistant to vancomycin
Clinical Practice Guidelines by the Infectious Diseases Society of America for the Treatment of Methicillin-Resistant Staphylococcus aureus Infections in Adults and Children: Executive Summary

Liu, Catherine et. al. MRSA Treatment Guidelines CID 2011:52 (1 February) 285-292

2014: Updated Practice Guidelines

Treatment for Purulent Mild CA-MRSA

- No significant risk factors for adverse outcomes
- I&D is the treatment of choice
- Antibiotics are not necessary
**Antibiotics Indicated**

- Abscesses associated with the following:
  - Severe or extensive disease
  - Rapid progression in presence of cellulitis
  - Signs and symptoms of systemic illness
  - Associated comorbidities or immunosuppression
  - Extremes of age
  - Abscess in area unable to be drained
  - Lack of response to I&D alone

**Statistics/Treatment in My Community**

- 37% of staph infection at DHMC – MRSA
- Nationally, approximately 50% are MRSA
- CA-MRSA antibiotic susceptibility
  - 50% will be resistant to clindamycin
- TMP/SMX has best coverage/sensitivity: 96-98%
  - Important for clinicians to obtain own antibiogram for communities in which you service

**IDSA Recommendations**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Adult Dose</th>
<th>Evidence Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>TMP-SMX</td>
<td>1-2 DS BID</td>
<td>All</td>
</tr>
<tr>
<td>Doxycycline</td>
<td>100 BID</td>
<td>All</td>
</tr>
<tr>
<td>Minocycline</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clindamycin</td>
<td>300-450 TID</td>
<td>All</td>
</tr>
<tr>
<td>Linezolid</td>
<td>600 BID</td>
<td>All</td>
</tr>
</tbody>
</table>
Treatment and Eradication Strategies: Recurrent infections

- GOOD handwashing
- Treatment with TMP/SMX, clinda, TCN, Bathe with disinfectants
  - Hibiclens, Phisodex, Clorox bleach
- Utilize topical disinfectants
  - Mupirocin – seeing resistance

IDSA: Decolonization Regimens
No role for oral antimicrobials

Preoperative Screening Study

- 1,200 primary total hip arthroplasty or total knee arthroplasty patients underwent preoperative Staphylococcus nasal screening between January 2009 and July 2009
- 1,100 patients who underwent elective TJA between July 2008 and December 2008 served as the control group
- Nasal swab at least 14 days before their procedure; those who tested + were treated with mupirocin bid x 5 days intranasally and chlorhexidine baths daily x 5 days
- Reduced surgical site infections by 82%

More Natural Options

- Stay tuned…
  - Vaccine in development
  - Lemongrass essential oil has been shown to inhibit all MRSA colony growth
  - Tea tree oil has also been shown effective
  - French clay is also being studied

Who Should Be Hospitalized?

- Two or more of the following:
  - Fever > 100.4
  - Wbc count: > 13,000/uL
  - Bands > 10%
  - Hand cellulitis
  - Facial cellulitis
  - Immunocompromise
  - Failing outpatient therapy
  - Age > 70 years of age

Contact Dermatitis: Rhus Dermatitis

- Rhus Dermatitis
  - Poison ivy, poison oak and poison sumac produce more cases of contact dermatitis than all other contactants combined
  - Occurs when contact is made between the leaf or internal parts of the roots and stem and the individual
  - Can occur when individual touches plant or an animal does and then touches human
  - Eruption can occur within 8 hours of the contact but may take up to 1 week to occur
Clinical Pearls
- Poison ivy is not spread by scratching
- No oleoresin is found in the vesicles and therefore, can not be spread by scratching
- Lesions will appear where initial contact with plant occurred
- Resin needed to be washed from skin within 15 minutes of exposure to decrease risk of condition

Clinical Presentation
- Clinical presentation
  - Characteristic linear appearing vesicles are likely to appear first
  - Often surrounded by erythema
  - Intensely itchy
  - Lesions often erupt for a period of 1 week and will last for up to 2 weeks
  - More extensive and widespread presentation can occur with animal exposures or burning of the plants / smoke exposure

Contact Dermatitis
Contact Dermatitis

Treatment
- Cool compresses 15 – 30 minutes three times daily
- Topical calamine or caladryl lotions
- Zanfel or similar (OTC) wash — binds urushiol oil and removes from body/blisters
  - 75% decrease in itching and rash within 24 hours per package
- Colloidal oatmeal baths once daily

Treatment
- Oral antihistamines
  - May wish to use sedating antihistamines at bedtime
- Topical corticosteroids
  - Avoid usage on the face
- Oral prednisone vs. injectable Kenalog or similar
  - 20 mg two times daily x 7 days
  - Kenalog 40 mg injection (IM)
Follow-up
- Monitor for secondary infections
- Impetigo
  - Staph vs. strep
  - MRSA
- Education:
  - Lesions will decrease over a 2 week period
  - May continue to erupt over 48 hours despite steroid administration
  - Not spreading lesions with rubbing or scratching

Hot Tub Folliculitis
- Inflammation of the hair follicle
- Caused by infection which occurs within 8 hours – 5 days of using contaminated hot tub or whirlpool
- Unfortunately, showering after exposure provides no protection
- Pseudomonas is the most common cause of hot tub folliculitis
- May also be caused by Staphylococcus, but unusual
  - MSSA or MRSA

Clinical Presentation
- One or more pustules may first appear
- Fever may or may not be present; usually low grade if it does occur
- Malaise and fatigue may accompany the outbreak
- Pustules may have wide rims of erythema
Hot Tub Folliculitis

Treatment
- Culture of lesions is likely warranted
- White vinegar wet compresses – 20 minutes on three x daily may provide significant benefit
- Oral Antibiotics
  - Ciprofloxacin is preferred agent if hot tub folliculitis is suspected due to pseudomonas coverage
- Discuss contagiousness
  - No evidence that it is spread person - person

Two Sets of Guidelines
- IDSA
  - http://www.idsociety.org/lyme
- ILADS
Erythema Chronicum Migrans

- Etiology
  - Caused by a spirochete called Borrelia Burgdorferi
  - Transmitted by the bite of certain ticks (deer, white-footed mouse)
  - 1st cases were in 1975 in Lyme, Connecticut
  - Affects many systems
  - Children more often affected than adults

This is NOT a Lyme Bearing Tick

Lyme Bearing Tick
Erythema Chronicum Migrans

- **Symptoms**
  - 3-21 days after bite
  - Rash (present in 72-80% of cases)- slightly itchy
  - Lasts 3-4 weeks
  - Mild flu like symptoms (50% of time)
  - Migratory joint pain
  - Neurological and cardiac symptoms
  - Arthritis, chronic neurological symptoms

---

Erythema Chronicum Migrans

- **Signs**
  - Rash:
    - Begins as a papule at the site of the bite
    - Flat, blanches with pressure
    - Expands to form a ring of central clearing
    - No scaling
    - Slightly tender
  - Arthralgias:
    - Asymmetric joint erythema, warmth, edema
    - Knee is most common location

---

Erythema Migrans
Erythema Migrans

Erythema Chronicum Migrans

- Signs
  - Systemic symptoms
    - Facial palsy
    - Meningitis
    - Carditis

Erythema Chronicum Migrans

- Plan
  - Diagnostic:
    - Sed rate: usually normal
    - Lyme Titer
      - IGM: Appears first: 3-6 weeks after infection begins
      - IGG: Positive in blood for 16 months
      - High rate of false negatives early in the disease
    - Lyme Western Blot
Per ILADS

- "Diagnosis of Lyme disease by two-tier confirmation fails to detect up to 90% of cases and does not distinguish between acute, chronic, or resolved infection"
- "The Centers for Disease Control and Prevention (CDC) considers a western blot positive if at least 5 of 10 immunoglobulin G (IgG) bands or 2 of 3 immunoglobulin M (IgM) bands are positive. However, other definitions for western blot confirmation have been proposed to improve the test sensitivity. In fact, several studies showed that sensitivity and specificity for both the IgM and IgG western blot range from 92 to 96% when only two specific bands are positive"
  - Lyme specific bands: 31, 34, and 39
  [http://www.ilads.org/lyme_disease/treatment_guidelines清晰ilads.html](http://www.ilads.org/lyme_disease/treatment_guidelines清晰ilads.html)

Erythema Chronicum Migrans

- Plan
  - Therapeutic: Per CDC
    - Amoxicillin 500mg tid x 21 – 28 days
    - Doxycycline 100 mg 1 po bid x 21 – 28 days
    - If in endemic area and tick is partially engorged, may treat with doxycycline 200 mg x 1 dose with food

ILADS

- Believe in Chronic Lyme Disease
- Treatment may be continued as long as needed to treat symptoms
- Alternative recommendations are made:
  - Doxycycline 100-200 mg bid or TCN 500 mg 1 bid
  - Clarithromycin 500 mg 1 po bid along with hydroxychloroquine 200 mg 1 two times daily
  - Azithromycin 500 mg once daily
Necrotizing Fasciitis
- Severe, deep, necrotizing infection
- Involves subcutaneous tissue down into the muscles
- Spreads rapidly
- Caused by Group A Beta Hemolytic Strep, Staph, Pseudomonas, E Coli
- Mortality: 8-70% depending upon organism and rapidity of treatment
- Disfigurement common

Necrotizing Fasciitis
- Symptoms
  - Usually occurs after surgery, traumatic wounds, injection sites, cutaneous sores
  - Generalized body aches, fever, irritability
  - Key: Red area of skin that is severely painful (It is out of proportion to findings)
  - Leg is most common location
- Physical Examination Findings
  - 1st appears as local area of redness that looks like cellulitis

Necrotizing Fasciitis
- Physical Examination Findings
  - Tender
  - Bullae with purulent center which ruptures quickly
  - Black eschar appears and the pain decreases
  - Systemic symptoms begin
Necrotizing Fasciitis

Plan
- Diagnosis: Culture of wounds, blood cultures, biopsy of area, CBC with differential, urinalysis
- Therapeutic: HOSPITAL ADMISSION
- Educational: Good wound hygiene

Stevens-Johnson Syndrome

- Distinct, acute hypersensitivity syndrome
- Many causes: Drugs, bacteria, viruses, foods, immunizations
- Also known as Bullous Erythema Multiforme
- Stevens-Johnson Syndrome is thought to represent the most severe of the erythema multiforme spectrum
- Two stages
  - Prodrome which lasts 1-14 days
  - 2nd stage: mucosal involvement where at least 2 mucosal surfaces are involved (oral, conjunctival, urethral)
Stevens-Johnson Syndrome

- Mortality: 5-25%
- Long-term complications are common
- Face almost always involved and mouth always involved
- Entire course: 3-4 weeks
- Most common in children aged 2 - 10

Stevens-Johnson Syndrome

- Symptoms
  - Constitutional symptoms such as fever, headache, sore throat, nausea, vomiting, chest pain, and cough
- Physical Examination Findings
  - Vesicles that are extensive and hemorrhagic
  - Bullae rupture leaving ulcerations which are covered with membranes
  - Leave large areas of necrosis and skin peels
  - Lesions on the conjunctiva

Erythema Multiforme
Stevens-Johnson Syndrome

- Plan
  - Must rule-out staphylococcal scalded skin syndrome
  - Therapeutic: HOSPITALIZATION with early ophthalmological evaluation
  - Steroids are controversial
  - Others in family may be genetically susceptible
  - Never take these medications again

Diagnosis?
Linked with___________?

Dermatofibroma
Key References


Thank You!

I Would Be Happy To Entertain Any Questions
Wendy L. Wright, MS, RN, ARNP, FNP, FAANP, FAAN

email: WendyARNP@aol.com