The ABCs of Pediatric Dermatology
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Objectives

- Recognize Common Pediatric Skin Disorders
- Identify Select Birthmarks
- Discuss a Few Rare Pediatric Cases
- Review Treatment of Select Cutaneous Infections

I have no conflicts of interest to declare.
All photos were taken with patient/parent consent for educational purposes.

Quiz

- T/F Infantile hemangiomas grow at a steady rate the first year of life.
- T/F When treating an infant for scabies, you should treat the scalp and face.
- T/F The most common cause of erythema multiforme in children is herpes simplex virus.

A is for Acne: Etiology

- Affects 90% or more of adolescents
- Hormones
  - DHEA-S
  - May begin as early as age 8, especially in girls.
- Propionibacterium acnes
- Inflammation and Hyperkeratinization
- Consider medications
  - Anabolic steroids, progestins, lithium, isoniazid, hydantoin, gold
A is for Acne

A is for Acne: Treatment

- OTC: Benzoyl Peroxide, Salicylic Acid
- Prescription Topicals: tretinoin, adapalene
- Prescription Orals: antibiotics, OCPs
- Oral Isotretinoin- can be life changing with severe and/or scarring acne.
  - teratogen, strict timelines with monthly pregnancy tests
  - most common side effect is dryness
- evidence does not support changes in mood
- Diet?: whey protein supplements may play a role

13 year old male with asymptomatic hyperpigmented lesion on the chest growing over the last year.

B for Beckers Melanosis
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- Benign, unilateral hyperpigmentation with hair, irregular border
- Often acquired in late childhood and adolescence
- Shoulder and chest region
- May fade in later life
- Treatment is cosmetic, laser hair removal if desired

B for Beckers Melanosis

18 year old female with itchy burning erythematous lesions on her toes for 2 months, no improvement with oral antibiotics.

C for Chilblains
**C for Chilblains**

- Hypersensitivity to cold
- Usually lasts weeks to months
- May blister or ulcerate, pain/itch/tingle
- In persistent cases, consider ruling out leukemia, lupus, cold-sensitive dysproteinemias
- Tx: warm clothing, topical corticosteroids, maybe calcium channel blockers

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8 month old female with diaper rash for the last few months. Patient has 3-4 loose stools daily.

**D for Diaper Rash**

Jaqyet's Dermatitis
D for Diaper Rash
Jacquet’s Dermatitis

• Severe erosive diaper dermatitis
• Most common with encopresis or urinary incontinence
• Treatment is barriers
  • Triple Paste, Triple Paste AF
  • No sting liquid bandage spray

E for Eczema

Eczema/Atopic Dermatitis

• Affects about 17% of kids
• Etiology
  • Epidermal barrier dysfunction
  • Genetics - a filagrin gene mutation is seen in about half of severe eczema cases
  • Immune dysregulation, specifically an increased T cell response
  • Environmental Factors like soaps and detergents

Atopic Dermatitis Treatment

• Emollients to repair (consider ceramides)
• Moisturizing often is more important than bathing frequency
• Bleach baths - 1/4 cup bleach in 1/2 tub of water
• Antihistamines
  • Diphenhydramine 1.25mg/kg/dose every 8 hours (or QHS)
  • Hydroxyzine 0.66 mg/kg/dose every 8 hours (or QHS)
  • Cetirizine >age 2: 2.5-5mg daily, >age 5: 5-10 mg daily
Atopic Dermatitis Treatment

- Topical Corticosteroids
  - Ointments are best, help medicine penetrate
  - For Scalp: Lotions or Solutions
  - Mild (face/intertriginous): Hydrocortisone 2.5%
  - Moderate-Severe: Triamcinolone 0.1% ointment (body)
- Calcineurin Inhibitors
  - Use up to 6 weeks- continue for 1 week after rash clears
  - Protopic® (tacrolimus) 0.03%, 0.1% ointment
  - Elidel® (pimecrolimus) 1% cream

8 year old male with asymptomatic rash around nose for a month. Currently on OTC cortisone cream with no improvement.

F for Face
Periorificial Dermatitis

- Acne-like eruption
- Perioral, nasolabial, periocular
- Unclear etiology- sometimes occurs after topical corticosteroids
- Treat with antibiotics- oral tetracyclines or azithrothromycin
- May improve with topical calcineurin inhibitors or topical antibiotics
F for Face
Periorificial Dermatitis

10 year old female with asymptomatic smooth palpable annular lesions on her lower extremities for 4 months.

G for Granuloma
Annulare

- Smooth annular papules or nodules
- Often hands, feet, wrists, ankles
- Cause unknown
- Usually resolves in months to years
- Corticosteroids if desired
- Questionable association with diabetes
G for Granuloma Annulare

H for Human Herpesviruses
- HHV 1- Herpes simplex 1
- HHV 2- Herpes simplex 2
- HHV 3- Varicella
- HHV 4- EBV
- HHV 5- CMV
- HHV 6- Roseola
- HHV 7- Roseola, ? PR
- HHV 8- associated with Kaposi Sarcoma

Herpes Simplex

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Herpes Simplex

Herpes Simplex - Treatment

- Acyclovir (keeps 180 days unrefrigerated)
  - 80 mg/kg/day divided TID (1200 mg/d max)
  - Suppression: 400 mg po BID
  - 200 mg/5 mL suspension
  - Primary Outbreak: 7-10 days, Recurrence: 5d
- Valacyclovir (3-5x more bioavailable) 30d in fridge
  - 20 mg/kg/dose TID (max 750 mg po TID)
  - Suppression: 500 or 1000mg QD
  - 50mg/mL suspension (180 mL)

16 year old male with fever/aches/ headache - itchy rash broke out a day later on head and face and has now moved to the arms and legs.

Varicella Zoster Virus

- prodrome of fever/chills/HA/myalgia
- rash 1-2 days later - “dew drop on a rose petal”
- rash begins on scalp/face/trunk, then to extremities
- Diagnosis: viral culture from base of vesicle
- before vaccination, up to 100 deaths per year
- contagious until day 5 of rash and all lesions crusted over
- Treat those greater than age 12, or those with underlying skin or lung problems.
  - oral acyclovir or valacyclovir
  - VZIG for immunocompromised
HHV-6: Roseola Infantum

- caused by HHV 6 or 7
- High fever for 3-5 days
- Usually kids less than age 3
- Fever resolves and maculopapular rash appears (trunk first then to extremities), halo of vasoconstriction
  - Lasts 1-3 days
- Periorbital edema is common

8 week old term healthy female with 2 weeks of scaly bumps and red papules all over the body. Afebrile, otherwise well.

I for Itch (Scabies)
I for Itch (Scabies)

- *S. scabiei* mite
- Skin to skin transmission or bedding/clothing
- Permethrin 5% cream
  - (include scalp and face in infants)
  - Wash in 8-14 hours, repeat in 1 week
- Ivermectin
  - ≥ 5 yo, 200 mcg/kg/dose- repeat in 2 weeks (max 12 mg per day)
- Environmental Decontamination
  - Stuffed animals in bags for 1 week
  - Treat whole household (3 wk incubation period)

J for

Just too many slides

K for Keratosis Pilaris
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- Benign follicular papules
- Extensor upper arms, upper thighs, lateral cheeks of face
- Common, 50-80% of adolescents
- Likely autosomal dominant transmission
- Treatment: moisturization, exfoliation, keratolytics (ammonium lactate 12%)

L for Lichen Striatus

- Linear dermatitis along lines of Blaschko
- Resolves naturally in 3-12 months, sometimes lasts up to 3 yrs
- Treatment often unsuccessful

Lines of Blashko

how skin cells migrated in development

19 month old male with lesion on the abdomen since birth, sometimes gets red and swollen. Diagnosis?
### M for Mastocytoma

- Birthmark of mast cells
- Yellow, orange or tan papules or plaques
- Peau d’orange appearance
- Darier Sign positive
- May have intermittent blistering: this resolves in 1-3 yrs.
- Involute over several years, usually by puberty
M for Molluscum Contagiosum

- Poxvirus, shiny and sometimes umbilicated papules
- Spread by skin to skin contact, swimming pools
- Many treatment options
  - Curettage (with topical anesthetic), Cantharidin
  - Avoid cryotherapy (painful)
- Some do self-resolve. One study found ¼ of kids had complete resolution with no treatment after 18 weeks
  - but they usually get sore and itchy while resolving

M for Molluscum Contagiosum

4 year old male with firm nodule on scalp since birth. Not changing. Family wants it removed. Next step?

A. Reassurance
B. MRI
C. Punch Biopsy
D. Surgical Excision
E. Examination with Woods Light

M for Midline Sinus Pericranii
M for Midline
Sinus Pericranii

- Rare developmental abnormality
- Abnormal connection between an extracranial venous malformation and intracranial venous sinuses
- Typically repaired surgically to avoid complications like thrombosis and hemorrhage—neurosurgery!

3 year old healthy male with nasal lesion since birth—parents notice it leaks clear fluid when they squeeze it. What is the next step?

A. Reassurance
B. MRI
C. Punch Biopsy
D. Surgical Excision
E. Examination with Woods Light

Nasal Midline Lesion:
Epidermoid or Dermoid Cysts, meningocele

- can extend intracranially
- risk of infection/meningitis
- need neurosurgery and plastics/ENT to operate
### Neonatal Cephalic Pustulosis

- Papulopustular eruption in neonates
- Usually presents at 3-6 weeks of age
- Face, neck, upper chest
- Etiology
  - Malassezia furfur (Pityrosporum ovale)
- Treatment
  - Ketoconazole 2% Cream BID for 1-2 weeks

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3 year old female with spreading mildly pruritic dry patches on the trunk for 3 weeks now. Afebrile, feels well, otherwise healthy. Diagnosis?

### O for

- Oh, but I read online that.....
### P for Pityriasis Rosea
- Benign, self-limited
- Herald patch
- Usually resolves in 6 weeks, PIHP
- Occasional pruritis- topical corticosteroids
- UV light

### Q for Quack
- W61.62XD: Struck by duck, subsequent encounter.

### R for Ringworm (Tinea)
R for Ringworm (Tinea)

- On the face, often systemic therapy is needed to clear, similar to tinea capitis
- Terbinafine for 4 weeks (250 mg pills)
  - <20 kg: 62.5 mg /d
  - 20-40 kg: 125 mg /d
  - >40kg: 250 mg /d

T for Target Lesions
Erythema Multiforme- hypersensitivity reaction

- Underlying cause is most frequently HSV I
- May have oral lesions, but rarely gingival
- Target lesions (fixed for at least 7 days)
- Self-limited, heal within 2-3 weeks
- Treat symptomatically
- Recurrence common
  - Prophylactic acyclovir may help

12 month old male with slightly itchy rash that began on the right flank 2 weeks ago, appearing faintly on the left now. He had a day of mild diarrhea when the rash began. Otherwise well.

U for Unilateral Laterothoracic Exanthem
U for Unilateral Laterothoracic Exanthem

- Age 1-5, etiology unknown
- Many morphologies
- Begins on one side, trunk->axilla
- May spread to other side, but predominant on first side
- 50% itch, may have fever, respiratory or GI complaints
- Resolves over 3-4 weeks, up to 8 weeks
- May desquamate

This 3 week old female has had a red spot on her arm since birth; it has become darker red and is asymptomatic. When can we expect the most rapid growth of this lesion?

A. between 0 and 3 weeks
B. between 5 and 7 weeks
C. between 3 and 4 months
D. between 5 and 6 months
E. growth rate is steady the whole first year

V is for Vascular
Infantile Hemangioma

- Present at 2-3 weeks, grow until 9-12 months of life (most rapid growth occurs at 5-7 weeks), then slowly involute
- max involution is usually by age 4 or 5
- When to Treat: trouble areas, ulcerating, internal
- Beta-Blockers- oral propranolol, topical timolol
- even topical timolol has potential of systemic absorption
- watch for bradycardia, hypoglycemia and hypotension
- Oral corticosteroids 2-4 mg/kg/d for months
W is for Wart

- Human Papillomavirus (HPV)
  - DNA virus
- 10% incidence in kids
- Incubation period 1-6 months
- 2/3 resolve in 2 years
  - but can also spread or become painful
W is for Wart

Treatment

- Topical Acid Therapy
  - for hands/feet: Biomed wart remover (TCA, Salicylic acid, cimetidine, ibuprofen)
  - 40% salicylic acid plasters
- Removal with local anesthetic and electrodessication and curettage
- For extensive warts, consider immune therapy
  - candida antigen, trychophyton antigen

22 year old female with mole on cheek present “forever” but recently changing colors and growing.
**X for eXcise - Melanoma**

- Risk factors:
  - dysplastic nevi
  - increased number of moles
  - indoor tanning
- 1/3-1/2 of melanomas come from existing moles
- New melanoma treatments available now
  - monoclonal antibodies

**Melanoma Treatment**

- Excision with margins, lymph node evaluation if >1mm depth
- If spread, consider Interferon
- For Metastatic Melanoma (stage 4)
  - CTLA-4 Inhibitors: Ipilimumab- Yervoy®
  - MAPK Pathway Inhibitors
    - BRAF Inhibitor: Vemurafenib- Zelboraf® Dabrafenib- Tafinlar®
    - MEK Inhibitor: Trametinib- Mekinist®
  - PD-1 Inhibitors: Nivolumab- Opdivo®, Pembrolizumab- Keytruda®

**Y for Youth**

- Youth require different anesthesia dosing
- Maximum lidocaine dose in kids is 0.4-0.5 mL/kg of 1% lidocaine
  - 10 kg kid gets 5 mL, 20 kg kid gets 10 mL max
- EMLA (2.5% Lidocaine / 2.5% Prilocaine)
  - Specific pediatric dosing to avoid methemoglobinemia, hypoxemia, seizures
  - Apply one hour prior to procedure- cover with plastic wrap
Z for Zinc Oxide (Sunscreen)

- SPF 30 and above, broad spectrum
- Sunscreen: avoid sun in kids < 6 months
- Water, snow, sand reflect rays
- Combo DEET and sunscreen products make sunscreen less effective

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Select References:

- Griffin, J. Basal cell carcinoma in childhood: Case report and literature review. JAAD 57:5 (2007) 547-551
- McMillan, et al. Topical Timed EL for Infantile Hemangiomas: Putting a Note of Caution in “Cautiously Optimistic” Pediatric Dermatology, 2012; Vol 36; No 5; 457-460