Approach to red, scaly rashes: differentiating mimickers

61st Annual Pediatric Spring Conference
Blank Children’s Hospital
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- Scenarios
  - Red, scaly baby
  - "Diaper rash"
  - Perioral eruptions
  - Generalized eruptions

The red, scaly baby
This infant has:

A. Atopic dermatitis
B. Seborrheic dermatitis
C. Immunodeficiency
D. Scabies

Infantile seborrheic dermatitis (vs. AD)

• Age of onset similar to atopic dermatitis, but may be earlier
• Intertriginous and diaper involvement distinguishes it from AD
• Overlap with AD common
• Pruritus less common, lack of excoriation
• Hypopigmentation typical, more notable in darker skin types
• Tends to be more responsive to treatment
• Remits earlier, usually resolves by 2 years of age
Seborrheic dermatitis

• Cause not completely understood
• Often associated with Malassezia species, because it colonizes sebum-rich skin

• Treatment
  • Topical corticosteroids and topical calcineurin inhibitors quickly minimize redness and scaling
  • Topical anti-yeast treatment may be used for long-term control
This infant has:

A. Atopic dermatitis
B. Seborrheic dermatitis
C. Immunodeficiency
D. Scabies
Streptococcal intertrigo

• Group A β-hemolytic strep
• Can secondarily infect seborrheic dermatitis or occur de novo
• Painful, red, weeping, malodorous intertriginous patches
  • Neck most common
  • Postauricular, axilla
• Candidiasis often suspected
  • Satellite papules expected with Candida not typical, but may be difficult to distinguish from parasitic seborrheic dermatitis
• Evaluation
  • Bacterial culture will detect organism and evaluate for candida
• Treatment
  • Consider systemic antibiotics, especially if more than 1 site
  • Topical antibiotics
• Langerhans cell histiocytosis
  • May have a “seborrheic dermatitis” presentation
  • Flags include erosions, hemorrhage, onset > 12 mos of age
  • Recalcitrance to treatment
This infant has:

A. Atopic dermatitis
B. Seborrheic dermatitis
C. Immunodeficiency
D. Scabies

Scabies

• Transmission through close, personal contact
• Incubation period
  • 4-6 weeks with 1st exposure
  • 1-4 days in those sensitized
• Some carriers may not be symptomatic
Polymorphic eruption in infants:
- Papules
- Pustules
- Vesicles
- Nodules

Nodules common in infants:
axilla, trunk, diaper area
Feet involvement more common in late infancy and beyond
- Pustules
- Vesicles
Scabies

• Treatment
  • Permethrin 5% cream applied for 8-14 hours, repeat 1 week later
  • Head to toe under 2 yo
  • Neck down after 2 yo, attention to hands/fingers/nails
  • Entire household simultaneously
  • Bedding/clothing washed/dried on hot
  • Bag items that cannot be laundered for 1 week
  • Ivermectin off-label
  • Antihistamines/topical corticosteroids for post-scabetic pruritus
  • Scabetic nodules may take weeks to resolve

This infant has:

A. Atopic dermatitis
B. Seborrheic dermatitis
C. Immunodeficiency
D. Scabies
Perioral or periorificial dermatitis

- Involves the perinasal, perioral, and/or periorbital skin
- Erythematous papules and pustules +/- scaling
- Etiology unknown
- Exposure to topical or inhaled corticosteroid common trigger

Periorificial Dermatitis: Reported suspected triggers

<table>
<thead>
<tr>
<th>Category</th>
<th>Suspected Triggers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medications</td>
<td>Topical steroids, inhaled corticosteroids, systemic corticosteroids</td>
</tr>
<tr>
<td>Cosmetic products</td>
<td>Fluorinated toothpaste, tartar control toothpaste, moisturizers, propolis, sunscreens</td>
</tr>
<tr>
<td>Physical factors</td>
<td>UV light, heat and cold</td>
</tr>
<tr>
<td>Microorganisms</td>
<td>Fusobacteria, <em>Candida spp, Demodex folliculorum</em></td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>Hormonal (oral contraceptives), chewing gum, amalgam dental filling</td>
</tr>
</tbody>
</table>

Periorificial dermatitis

• Management
  • Stop topical corticosteroids – May trigger flare
    • Abrupt or wean
  • Topical +/- systemic agent depending on severity/age
    • Metronidazole
      • Cream vehicle less irritating than gel
    • Use of a spacer with a MDI may be beneficial

Perioral irritant contact dermatitis

• “Lip-licker’s” dermatitis
• Pacifier dermatitis

• More common winter with lip-licking
• Saliva acts as an irritant
• Typically well-circumscribed, localized
  • Consider additional causes if more widespread

<table>
<thead>
<tr>
<th>Table 4</th>
<th>Therapeutic agents for periorificial dermatitis</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topical Agents</strong></td>
<td><strong>Level of Evidence</strong></td>
</tr>
<tr>
<td>Metronidazole 40%</td>
<td>a</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>b</td>
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<tr>
<td>Penicillinase 75%</td>
<td>b</td>
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<tr>
<td>Sulfacetamide or sulfacetamide 50%</td>
<td>B</td>
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<tr>
<td>Amoxicillin 75%</td>
<td>B</td>
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<tr>
<td>Clindamycin 45%</td>
<td>C</td>
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<tr>
<td>Tetracycline 25%</td>
<td>D</td>
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<tr>
<td>Aldipine</td>
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“Perioral” Dermatitis:
When to suspect allergic contact dermatitis?

1. New onset dermatitis in an atopic dermatitis patient
2. Eyelid involvement may raise suspicion
3. Recalcitrance

Diaper Dermatitis

- Differential Diagnosis
  - Irritant contact dermatitis
  - Candida
  - Seborrheic dermatitis
  - Psoriasis
  - Allergic contact dermatitis
Diaper dermatitis: often multifactorial
  Irritant contact +/- Candida +/- Allergic contact

- Irritant contact
  - Convex surfaces . . .
  - Landing strips
  - Erosions

- Candida
  - Satellite papules
  - Scaling
  - Pustules possible
“Diaper” dermatitis: Perianal erythema

- Differential diagnosis:
  - Group A Streptococcus
  - Contact dermatitis (irritant and/or allergic)
  - Psoriasis

Perianal erythema: Perianal Streptococcal Dermatitis

- Etiology
  - Group A β-hemolytic streptococcus
- Clinical
  - Perianal erythema
  - Maceration
  - Fissures
  - Tender/pruritic
  - Constipation
- Culture of the perianal skin typically positive
Perianal erythema:
Perianal Streptoccocal Dermatitis

- Treatment
  - PCN/cephalosporins
  - Topical
- Recurrence
  - Consider longer course of antibiotics
  - Check siblings

Perianal/perineal erythema:
Allergic contact dermatitis

- Allergic contact dermatitis once thought to be rare in children
  - Positive patch test results equal prevalence to adults, more relevant reactions
- Potential allergens
  - Diaper wipes, flushable wipes
  - Topical diaper preparations
  - Disposable diapers
Wipes and contact dermatitis

- Increased marketing of wipes for personal care products
- Contact allergy to wet wipes (including flushable wipes or “moist toilet paper”)
- Distribution: perianal, buttock, facial, and hand
- Preservatives are the main allergens, but fragrance too
  - Formaldehyde releasers
  - Isothiazolinones

Wipes and contact dermatitis

- Methylchloroisothiazoline/methylisothiazolinone (MCI/MI)
  - Preservative with increasing rates of contact allergy
- MI alone initially believed to be a weaker sensitizer
  - Increase in permitted concentration
  - Increasingly recognized as a contact allergen – 2013 Allergen of the Year
- May be missed if only MCI/MI is tested for; test for MI alone
Potential Allergens in Disposable Diaper Wipes and Topical Diaper Preparations

- 63 disposable diaper wipes
- 41 topical diaper preparations
- 3 top-selling diaper brands

<table>
<thead>
<tr>
<th>Allergens</th>
<th>Frequency in Disposable Diaper Wipes</th>
<th>Frequency in Topical Diaper Preparations</th>
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<tbody>
<tr>
<td>Alcohol</td>
<td>3.8%</td>
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<tr>
<td>Benzyl alcohol</td>
<td>12.19%</td>
<td>2.9%</td>
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<td>Benzoyl peroxide</td>
<td>3.4%</td>
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<tr>
<td>Formaldehyde</td>
<td>8.8%</td>
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<td>Ethanol</td>
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<td>Glucose</td>
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<td>Sensitizing agents</td>
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<tr>
<td>Phenoxyethanol</td>
<td>1.3%</td>
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<tr>
<td>Other sensitizers, unspecified</td>
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<tr>
<td>Phenoxyethanol isobutyl esters</td>
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<td>Reagents</td>
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Isothiazolinones

- 152 pediatric skincare products (Target & Wal-Mart)
  - 30 (19.7%) contained MI
  - 14 of 39 (36%) of facial wipes contained MI
- MI-containing products labeled:
  - “Hypoallergenic”
  - “Gentle ingredients”
  - “Sensitive”
  - “Natural”

  - Reviewed registry of pediatric patch testing (1100 cases, 50 states) for MCI/MI and MI positivity
  - 96 positive reactions
  - Reviewed location of dermatitis in those patients with + MCI/MI or MI rxns compared to the rest of the study population
    - Higher rates of groin/buttock dermatitis (P < 0.001)
    - Not testing for MI alone may miss 33-60% of MI sensitivity

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Potential Allergens in Disposable Diaper Wipes

<table>
<thead>
<tr>
<th>Potential Botanical Allergens</th>
<th>Observed Frequency in Disposable Diaper Wipes (n = 63)</th>
<th>Observed Frequency in Topical Diaper Preparations (n = 41)</th>
</tr>
</thead>
<tbody>
<tr>
<td>R. rosea</td>
<td>50 (79.4)</td>
<td>11 (26.6)</td>
</tr>
<tr>
<td>A. mexicana</td>
<td>Not observed</td>
<td>19 (46.3)</td>
</tr>
<tr>
<td>C. officinalis</td>
<td>4 (6.3)</td>
<td>9 (22.0)</td>
</tr>
<tr>
<td>M. anissus</td>
<td>3 (4.8)</td>
<td>5 (12.2)</td>
</tr>
<tr>
<td>L. angustifolia</td>
<td>3 (4.8)</td>
<td>5 (12.2)</td>
</tr>
<tr>
<td>M. chamomilla</td>
<td>24 (38.1)</td>
<td>6 (14.6)</td>
</tr>
<tr>
<td>M. alternifolia</td>
<td>3 (4.8)</td>
<td>2 (4.9)</td>
</tr>
</tbody>
</table>

*This table is for reference purposes.*
### Ingredients of Popular Diaper Brands in the United States

<table>
<thead>
<tr>
<th>Brand A</th>
<th>Brand B</th>
<th>Brand C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top sheet</td>
<td>Polyethylene</td>
<td>Polyethylene</td>
</tr>
<tr>
<td>Back sheet</td>
<td>Polyethylene</td>
<td>Polyethylene</td>
</tr>
<tr>
<td>Color</td>
<td>Pigment</td>
<td>Pigment</td>
</tr>
<tr>
<td>Absorbent core</td>
<td>Processed wood pulp</td>
<td>Wood pulp</td>
</tr>
<tr>
<td>Absorbent batting material</td>
<td>Cellulose</td>
<td>Cellulose</td>
</tr>
<tr>
<td>Waistband</td>
<td>Elastic</td>
<td>Synthetic rubber</td>
</tr>
<tr>
<td>Diaper</td>
<td>Adhesive</td>
<td>Adhesive</td>
</tr>
<tr>
<td>Lotion</td>
<td>Petrolatum, Aloe barbadensis extract</td>
<td>Petrolatum, Aloe barbadensis extract</td>
</tr>
<tr>
<td>Fragrance</td>
<td>Perfume</td>
<td>Parfum free</td>
</tr>
</tbody>
</table>
Perianal erythema: Psoriasis

- Look for other signs of psoriasis
  - Scalp, axilla, umbilicus, postauricular creases, nails
- Difficult clinical diagnosis with isolated disease
  - Culture
  - Eliminate potential sensitizers
  - Biopsy

Generalized eruptions
Eruptive diffuse monomorphous papular eruption = Think viral or Id.
Allergic Contact Dermatitis

• Ig reaction
  • Hypersensitivity reaction to contact allergen
  • Diffuse
  • Extensor surfaces, neck, face, ears

• Treatment
  • Avoidance of the offending agent
  • Potent topical steroids to initiating site
  • Consider systemic corticosteroids
Pityriasis Rosea

- Acute, self-limited exanthematous disease
- Herald patch variably present (12-90%)
- Round or oval, pink-to-salmon-colored plaques with fine scale
- Trunk and proximal extremities most common
  - "Christmas tree pattern" on back
- Darkly pigmented skin
  - More papular, hyperpigmented
    - Face and scalp more common (30% vs. 8% in Caucasian patients)
- Pruritus possible
Pityriasis Rosea

• Adolescents/Young adults
• Rare prodrome
  • Malaise, nausea, anorexia, HA, GI/URI symptoms, sore throat, mild fever
• 6-8 week duration typical
Pityriasis Rosea

- **Etiology**
  - Human Herpes Virus 7
  - Human Herpes Virus 6

- **Treatment**
  - No evidence-based treatment recommendations
  - Topical corticosteroids/antihistamine may alleviate pruritus when present
  - NBVUB phototherapy
    - 1 randomized, controlled study of 100 patients 3x/week for 4 weeks showed benefit
  - Acyclovir controversial
    - Low-dose and high-dose regimens exist

Drug-induced PR-like eruptions

- Barbiturates
- Methopromazine
- Captopril
- Clonidine
- Gold
- Metronidazole
- Isotretinoin
- Levamisole
- NSAIDs
- Omeprazole
- Terbinafine
- Ergotamine tartrate
- Tyrosine kinase inhibitors
- Adalimumab
Psoriasis vs. Pityriasis Rosea

- History or evidence of psoriasis predating eruption
  - Scalp, umbilicus, genitalia
- Scale may be thicker, more coarse vs. fine, flaky
- Central scale vs. peripheral/collarette
Lichen planus

- “Purple, polygonal, pruritic, papules and plaques”
- Distribution
  - May be localized or widespread
  - Flexural wrists, ankles common with localized disease
  - Genitalia commonly affected
  - Mucosal involvement may be seen (oral, genitalia, esophageal)
  - Scalp, nails
- Scale is scant, veil-like in many cases, but can become hypertrophic

Annular rashes

What's going a-round?
Thank you!