The Itch
That Rashes

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Conflict of Interest

• No conflict of interest
• Will discuss off label use of medications
Most likely diagnosis?

a. Atopic dermatitis
b. Contact dermatitis
c. Psoriasis
d. Scabies
e. Seborrheic dermatitis
Atopic Dermatitis (AD)

- Chronic, pruritic, inflammatory skin disease with a wide range of severity
- One of the most common skin disorders in developed countries, affecting up to 20% of children and 1-3% of adults
- Onset most common between 3-6 months of age
  - 60% of patients in 1st year of life
  - 90% by 5 years of age
- Majority will have resolution by adulthood
  - 10-30% will not
Will my child outgrow this?

• Not sure. I hope so.
• Cross-sectional and cohort study of PEER registry
  – 7157 patients enrolled
  – 2416 patients followed for at least 5 years
  – Mild to moderate AD
  – Self-report regarding symptom-free for 6 months
• Not until 20 years of age had 50% of patients had at least one 6-month symptom-free period
• AD is probably lifelong

Atopic Dermatitis

• Primary symptom is pruritus (itch)
  – “The itch that rashes”
  – Scratching to relieve AD-associated itch gives rise to the ‘itch-scratch’ cycle and can exacerbate the disease
  – Often interferes with sleep
  – Infants will shake their head back and forth
  – Sweating often exacerbates

• Chronic course, with periods of acute flares and remissions
Clinical Findings

• Acute, subacute and chronic eczematous lesions
  – Acute: edematous, erythematous papules and plaques that may exhibit vesiculation, oozing and serous crusting
  – Subacute: erythema, scaling and variable crusting
  – Chronic: thickened plaques with lichenification and scale

• All types can leave postinflammatory hyper- and hypopigmentation upon resolution

• Distribution is symmetric and varies with age
Infants and Toddlers

- Eczematous papules and plaques on the scalp, forehead, cheeks, and extensor surfaces
Infants and Toddlers

• Note the distribution of face and extensor surfaces
Infants and Toddlers

• Can also involve flexural areas
Older Children

• Older children and adolescents: lichenified, eczematous papules and plaques in flexural areas of the neck, elbows, wrists, and ankles
Older Children

- Can also involve extensor surfaces
Diagnosis

• Essential features
  – Pruritus
  – Eczema (acute, subacute, chronic)
    • Typical morphology and age-specific patterns
    • Chronic or relapsing history
Diagnosis

• Important features
  – Early age of onset
  – Atopy
    • Personal and/or family history
    • Immunoglobulin E reactivity (not routinely recommended, present in ~ 20%)

• Xerosis
Risk Factors

• Family history of atopy
  – 70% of patients + family history of atopic diseases
  – Odds of developing AD 2-3x higher with 1 atopic parent
    • 3-5x higher if both parents are atopic

• Loss of function mutation in the FLG gene
  – Encodes profilaggrin -> degraded to filaggrin
  – Play a key role in skin barrier
Atopic Triad

• What percentage of children with atopic dermatitis also have or will develop asthma or allergic rhinitis?
  a. 0-15%
  b. 15-30%
  c. 30-50%
  d. 50-80%
  e. 80-100%
Atopic Triad

Answer: d

• 50-80% of children will have another atopic disease
Pathogenesis

• Cause of AD is multifactorial and not completely understood
• Following factors are thought to play varying roles:
  – Genetics
  – Skin Barrier Dysfunction
  – Impaired Immune Response
  – Environment
Which corticosteroid would you choose?

a. Clobetasol propionate 0.05% ointment
b. Fluocinonide 0.05% ointment
c. Hydrocortisone butyrate 0.1% cream
d. Hydrocortisone butyrate 0.1% ointment
e. Triamcinolone acetonide 0.1% ointment
What corticosteroid would you choose?

a. Clobetasol propionate 0.05% ointment
b. Fluocinonide 0.05% ointment
c. Hydrocortisone butyrate 0.1% cream
d. **Hydrocortisone butyrate 0.1% ointment**
e. Triamcinolone acetonide 0.1% ointment
Treatment

4 Major Components

- Anti-inflammatory
- Anti-pruritic
- Antibacterial
- Moisturizer
Topical Corticosteroids (TCS)

• Mainstay of anti-inflammatory therapy
• Patient vehicle preference, cost, and availability determine their selection
• For acute flares, use of mid- or higher-potency TCS for short courses may be appropriate to gain rapid control of symptoms
• Twice-daily application is generally recommended
Topical Corticosteroids (TCS)

• Excoriated and fissured lesions should be treated given that the underlying inflammation and pruritus lead to these secondary changes
• For longer-term management, the least-potent corticosteroid that is effective should be used to minimize the risk of adverse effects
• Proactive, intermittent use as maintenance therapy (1-2 x/week) on areas that commonly flare will help prevent relapses

Topical Corticosteroids

- Monitor for cutaneous side effects during long-term, potent steroid use
- Greater caution regarding potency is needed when treating thin sites (face, neck and skin folds)
- Address patient fears of side effects -> improve adherence and avoid under treatment
### Table V. Relative potencies of topical corticosteroids

<table>
<thead>
<tr>
<th>Class</th>
<th>Drug</th>
<th>Dosage form(s)</th>
<th>Strength (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Very high potency</td>
<td><strong>Clobetasol propionate</strong></td>
<td>Ointment</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cream, foam, ointment</td>
<td>0.05</td>
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<tr>
<td></td>
<td></td>
<td>Ointment</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Augmented betamethasone dipropionate</td>
<td>Cream, ointment</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Betamethasone dipropionate</td>
<td>Cream, ointment, solution</td>
<td>0.05</td>
</tr>
<tr>
<td>II. High potency</td>
<td>Amcinonide</td>
<td>Cream, lotion, ointment</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Augmented betamethasone dipropionate</td>
<td>Cream</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Betamethasone dipropionate</td>
<td>Cream, ointment, solution</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Desoximetasone</td>
<td>Cream</td>
<td>0.25</td>
</tr>
<tr>
<td></td>
<td>Desoximetasone</td>
<td>Gel</td>
<td>0.05</td>
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<tr>
<td></td>
<td>Difluridine diacetate</td>
<td>Cream</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td><strong>Fluocinonide</strong></td>
<td>Cream, gel, ointment, solution</td>
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<td></td>
<td>Halcinonide</td>
<td>Cream, ointment</td>
<td>0.1</td>
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<tr>
<td></td>
<td>Mometasone furoate</td>
<td>Ointment</td>
<td>0.1</td>
</tr>
<tr>
<td>III-IV. Medium potency</td>
<td>Triamcinolone acetonide</td>
<td>Cream, ointment</td>
<td>0.5</td>
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<tr>
<td>V. Lower-medium potency</td>
<td><strong>Triamcinolone acetonide</strong></td>
<td>Cream, ointment</td>
<td>0.1</td>
</tr>
<tr>
<td>VI. Low potency</td>
<td>Hydrocortisone butyrate</td>
<td>Cream, ointment, solution</td>
<td>0.1</td>
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<tr>
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<td>Hydrocortisone probutate</td>
<td>Cream</td>
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<td></td>
<td>Hydrocortisone valerate</td>
<td>Cream, ointment</td>
<td>0.2</td>
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<tr>
<td></td>
<td>Prednicarbate</td>
<td>Cream</td>
<td>0.1</td>
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<tr>
<td>VII. Lowest potency</td>
<td>Alclometasone dipropionate</td>
<td>Cream, ointment</td>
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<tr>
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<td>Desonide</td>
<td>Cream, gel, foam, ointment</td>
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<td>Flucinolone acetonide</td>
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<td>Flurandrenolide</td>
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<td></td>
<td>Fluticasone propionate</td>
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<td>0.05</td>
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<tr>
<td></td>
<td>Fluticasone propionate</td>
<td>Ointment</td>
<td>0.0005</td>
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<tr>
<td></td>
<td>Mometasone furoate</td>
<td>Cream</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td><strong>Dexamethasone</strong></td>
<td>Cream, ointment</td>
<td>0.1</td>
</tr>
<tr>
<td></td>
<td>Hydrocortisone</td>
<td>Cream, lotion, ointment, solution</td>
<td>0.25, 0.5, 1</td>
</tr>
<tr>
<td></td>
<td>Hydrocortisone acetate</td>
<td>Cream</td>
<td>0.05</td>
</tr>
<tr>
<td></td>
<td>Hydrocortisone acetate</td>
<td>Cream, ointment</td>
<td>0.5-1</td>
</tr>
</tbody>
</table>

Common Prescriptions

- Apply hydrocortisone butyrate 0.1% ointment to red, scaly skin on the face, neck, armpits, groin and buttocks BID prn. Dispense 45 grams, 2 refills.

- Apply triamcinolone 0.1% ointment to red, scaly skin on the chest, abdomen, back, arms, legs, hands and feet BID prn. Dispense 80 gram or 454 gram (depending), 2 refills.
Which corticosteroid would you choose?

a. Clobetasol 0.05% ointment BID
b. Desonide 0.05% ointment BID
c. OTC topical hydrocortisone multiple times per day
d. Triamcinolone 0.1% ointment BID
Which corticosteroid would you choose?

a. Clobetasol 0.05% ointment BID
b. Desonide 0.05% ointment BID
c. OTC topical hydrocortisone multiple times per day
d. Triamcinolone 0.1% ointment BID

I would pick triamcinolone or clobetasol BID and see them back in clinic in 2 weeks for re-evaluation.
Adverse Effects of TCS

- Cutaneous
  - Purpura
  - Telangiectasia
  - Striae
  - Focal hypertrichosis
  - Acneiform or rosacea-like eruptions
  - Allergic contact dermatitis (to TCS or ingredients in their formulations)

- Proactive, 1-2 x/weekly application of a mid-potency TCS for up to 16 weeks has not demonstrated these adverse events

Wet-Wrap Therapy

- To treat significant flares and/or recalcitrant disease
- Ambulatory or inpatient
- Topical agent covered by wetted first layer of tubular bandages, gauze or cotton suit
- Followed by dry second outer later
- Occludes topical agent for increased penetration, decreasing water loss, and providing a physical barrier against scratching
Wet-Wrap Therapy

• When used with mid- to higher-potency corticosteroids, absorption is increased -> may cause hypothalamic-pituitary-adrenal axis suppression
  – Temporary decreases in early morning serum cortisol levels have been reported, although short courses have not been associated with prolonged adrenal suppression

• No specific monitoring for systemic side effects is recommended

Topical Calcineurin Inhibitors (TCI)

- Tacrolimus (Protopic) 0.03%, 0.1% ointment
- Pimecrolimus (Elidel) 1% cream
- Effective for acute and chronic treatment, along with maintenance
- Steroid-sparing agent
- May cause skin burning and pruritus, especially when applied to acutely inflamed skin
Topical Calcineurin Inhibitors

• Proactive, intermittent use of TCI as maintenance therapy (2-3 x/week) on areas that commonly flare -> help prevent relapses and is more effective than use of emollients alone

When to Choose TCI > TCS

- Recalcitrance to steroids
- Sensitive areas (face, anogenital, skin folds)
- Steroid-induced atrophy
- Long-term uninterrupted topical steroid use
TCI Black Box Warning

- Rare cases of malignancy (skin cancer and lymphoma) have been reported in patients treated with these agents, but a causal relationship has not been established.
- Based on a theoretical risk from the use of high-dose oral calcineurin inhibitor therapy in patients post-transplantation and from animal studies with exposures 25 – 50x the maximum human dose.
- Risk of cancer has not been shown to be higher.

Moisturizers

• Used to combat xerosis and transepidermal water loss
• May be the primary treatment for mild disease and should be part of the regimen for moderate and severe disease
• Important component of maintenance treatment and prevention of flares
Moisturizers

- Liberal and frequent reapplication of moisturizers such that xerosis is minimal
- Should be applied soon after bathing to improve skin hydration
- Choice of moisturizer should be safe, effective, inexpensive, and free of additives, fragrances, perfumes, and other potentially sensitizing agents
Anti-Pruritus

- Short-term, intermittent use of sedating (e.g. diphenhydramine, hydroxyzine) antihistamines may be beneficial in the setting of sleep loss secondary to itch.
- Topical anti-pruritic (e.g., camphor/menthol or pramoxine)
  - Minimally effective, short-term relief only; can be allergic sensitizers as well.
Systemic Antibiotics?
Antibacterial

• Predisposed to secondary bacterial infection
  – Most commonly, Staphylococcus aureus
• >90% of adults with AD are colonized with S. aureus
• Systemic antibiotics when there is clinical evidence of bacterial infection
  – Obtain wound culture for sensitivities
• May be administered in addition to standard treatment for AD including concurrent application of topical steroids
Bleach Baths

• Twice weekly for 10-15 minutes
• Rinse off with normal water when finished
• ½ cup to full bath
• ¼ cup to half bath
• 2 capfuls to baby bath
• 1 RCT in 31 patients

Infected AD
Infected AD
• Parent education and written instruction are key to success

• “Action Plans” provide parents and caregivers with easy to follow treatment recommendations and guidance
Should my child avoid bathing?

- Bathing can have different effects on the skin depending on the manner in which it is carried out
  - Can hydrate the skin and remove scale, crust, irritants, and allergens
  - If left to evaporate from the skin, greater transepidermal water loss occurs -> application of moisturizers soon after bathing is necessary to maintain good hydration
Bathing

- Limited use of nonsoap cleansers (neutral to low pH, hypoallergenic, and fragrance free)
- With the exception of bleach, limited data on the addition of oils, emollients, and other related additives to bath water and their benefits for AD
- The use of water-softening devices has not been shown to have benefits over the use of normal water
Soak and Smear

• Soaking in plain water for 20 minutes followed by the immediate application of pharmacologic anti-inflammatory therapies to these sites, without toweling first, is a helpful treatment measure.
Is this from a food allergy?

- Role of allergy in AD remains controversial
- Many patients with AD have sensitization to food and environmental allergens
  - However, evidence of allergen sensitization is not proof of a clinically relevant allergy
Is this from a food allergy?

• Food allergy as a cause of, or exacerbating factor for, AD is uncommon
  – Identification of true food allergies should be reserved for refractory AD in children in whom the suspicion for a food allergy is high
  – Infants with AD and food allergy may have additional findings that suggest the presence of food allergy, such as vomiting, diarrhea, and failure to thrive
Systemic Immunosuppressants

• Indicated when
  – Inadequate control despite optimized topical care
  – Significant negative physical, psychosocial, or social impact

• Cyclosporine, mycophenolate mofetil, methotrexate, azathioprine have the most evidence
Systemic Steroids

• In general, avoid their use
• Rebound flare and increased disease severity upon discontinuation
  – 1 mg/kg/day until clear, then taper another 2-4 weeks
• For severe eczema as a bridge to systemic treatment
Systemic Steroids Adverse Effects

- Hypertension
- Glucose intolerance
- Gastritis
- Weight gain
- Decreased bone density
- Adrenal suppression
- Emotional liability
- Decreased linear growth
When to Refer

• Patients should be referred to a dermatologist when:
  – Recurrent skin infections
  – Extensive and/or severe disease
  – Symptoms are poorly controlled with topical steroids
Diagnosis?

- Monomorphic crusted papules in a teenage female with a history of atopic dermatitis
Eczema Herpeticum

• Disseminated HSV infection, occurs in individuals with AD or other chronic skin disease
• Abrupt onset of fever, malaise
• Monomorphic vesicles or crusted papules
• Lesions most prominent in areas of active dermatitis
Complications

• Keratoconjunctivitis
  – Call ophthalmology if affects the face

• Secondary bacterial infection

• Fluid loss

• Viremia
Treatment

- **Antiviral therapy**
  - 10-14 days
  - IV acyclovir 5 - 10mg/kg iv q 8 hr
  - Oral acyclovir 15 mg/kg (400 mg max) po 3-5x/d

- **Topical steroids**
  - Continue with limited involvement

Molluscum Contagiosum

• More widespread and severe in AD
• Treatment with a topical corticosteroid may help to reduce associated pruritus and prevent autoinoculation from scratching
Diagnosis?

• Poorly defined hypopigmented, scaly patches on the face
What is the most likely diagnosis?

a. Pityriasis alba
b. Seborrheic dermatitis
c. Tinea versicolor
d. Vitiligo
Pityriasis Alba

• Pityriasis alba is a mild, often asymptomatic, form of AD
• Primarily on the face
• Presents as poorly margined, hypopigmented, slightly scaly patches on the cheeks
• Typically found in young children (with darker skin), often presenting in spring and summer when the unaffected skin begins to tan
Treatment

• Reassure patients and parents that it generally fades with time
• Use of sunscreens will minimize tanning, thereby limiting the contrast between diseased and unaffected skin
• If moisturization and sunscreen do not improve the skin lesions, consider low-potency corticosteroid or topical calcineurin inhibitor