Common Allergic Rashes
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Objectives

- To better identify atopic dermatitis
- Associated rashes
  - Prurigo nodularis
  - Lichen simplex chronicus
  - Ichthyosis vulgaris
  - Keratosis pilaris
  - Angular cheilitis
  - Pityriasis alba
  - Dermatographism
  - Dyshidrotic Eczema

Identify rashes in differential of atopic dermatitis
- Nummular eczema
- Perioral Dermatitis
- Psoriasis, Seb Derm
- Polymorphous Light eruption
- Acrodermatitis
- Contact Dermatitis
  - Identify causes of hypersensitivity vs irritant reactions

Case #1
- 10 month old infant sent by the pediatrician for itchy, red rash on the trunk and arms
- Some areas of excoriation with honey crusting
- Not responding to moisturizers, and pediatrician concerned about using topical steroids in this age
- Child is thriving well, no diarrhea
- Child is eating all table foods and family has not noted any change in rash with diet
- Both parents have a hx of seasonal allergies

Atopic Dermatitis

- Highly pruritic chronic inflammatory skin disease often associated with atopy and elevated IgE levels
- Lifetime prevalence of 10-20% in children and 1-3% in adults
  - Commonly presents during early infancy
  - Can persist or start in adulthood
- Often precedes development of asthma and/or allergic rhinitis
  - Beginning of the Atopic March
Clinical Manifestations

- 60% present in the 1st yr of life; 85% by 5 yrs
- About 40% resolve by adulthood
- 3 age-group stages
  - Infantile
  - Childhood
  - Adult
- Uncommon to see lesion in the axillary, gluteal or groin areas

Diagnosis – Consensus Criteria

- Based on history and clinical findings
- Evidence of itchy skin
- 3 or more of the following:
  - History of involvement of skin creases
  - Presence of generally dry skin within past year
  - Onset in child under 2 years of age
  - Visible flexural dermatitis
- No longer include allergy criteria

Distribution in Children

Distribution in Adults
Typical Morphology

- **Acute**: Oozing, crusting, eroded vesicles on erythematous skin
- **Subacute**: Thicker, paler, scaly, excoriated plaques
- **Chronic**: Lichenified, hyperpigmented, more scaly plaques

Papular eczema

Infectious Complications

<table>
<thead>
<tr>
<th>Pathogen</th>
<th>Disease</th>
<th>Recommended Rx/Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bacteria</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>S. aureus</em></td>
<td>Impetiginized lesions</td>
<td>- Topical mupirocin for localized</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- 1st generation cephalosporins</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Trimethoprim sulfa, clindamycin if worried about MRSA</td>
</tr>
<tr>
<td><strong>Viruses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herpes simplex</td>
<td>Eczema herpeticum</td>
<td>- Antiviral tx crucial; dissemination possible</td>
</tr>
<tr>
<td>Poxviruses</td>
<td>Molluscum contagiosum; warts</td>
<td>- No treatment needed</td>
</tr>
</tbody>
</table>

**Bacterial-Impetigo**

- Usually due to *Staph aureus*
- Blister bursts, leave golden crusted lesion
  - Can occur anywhere
- Management
  - Oral/topical abx depending on severity
**Viral-Molluscum Contagiosum**

- DNA pox virus
- Discrete pearly pink umbilicated papules 1-3mm diameter
- If squeezed release cheesy substance
- Usually grouped
- Spread by contact eg. Towels
- Management
  - Untreated, resolve over months
  - Cryotherapy, scraping of lesions, cantharidin and sometimes topical therapy used for warts
  - Don’t pick or will scar!

**Viral-Herpes Simplex**

- Eczema herpeticum
- Incubation period of 5-12 days
- Multiple vesiculopustular lesions in crops
- Vesicles or infected skin fail to respond to antibiotics
- Management: antivirals

**Fungal - Tinea Versicolor**

- Caused by Pityrosporum ovale
- Trunk, back, abdomen and proximal extremities
- Whitish to redish brown in color with fine dust like scale
- Minimal pruritus
- Often noted in summer when skin fails to tan
Tinea Versicolor

• Dx: Clinical
  – KOH prep shows spaghetti and meatballs look
  – Woods lamp shows yellowish-green lesions
• Treatment: Selenium sulfide lotion daily for 2 weeks
  – Leave on for 10 min
  – Refractory cases may require topical anti-fungal for 2 weeks

Atopic Dermatitis Treatment

• Lukewarm soaking baths followed by occlusive emollients
• Ointments > oils > creams > lotions
• Avoid hot water for washing: creates increased dryness of skin and may be a direct trigger for pruritus
• Moisturizing soaps preferred; avoid drying or deodorant soaps
• Wet dressings for severely affected skin
• Topical steroids or calcineurin inhibitors as needed
Choice of Emollient

• Traditional moisturizers
  – Dye-free, Fragrance-free
• Ceramide dominant moisturizers
• Prescription Barrier “devices”
  – NOT cost-effective for daily moisturizer
  – May be useful as adjunct or alternative to topical steroids
• The best emollient is the one that gets used!

Topical Corticosteroids

<table>
<thead>
<tr>
<th>Class I (super potent)</th>
<th>Class IV (mid-strength)</th>
</tr>
</thead>
<tbody>
<tr>
<td>clobetasol dipropionate 0.05%</td>
<td>mometasone cream 0.1%</td>
</tr>
<tr>
<td>betamethasone dipropionate 0.05%</td>
<td>hydrocortisone ointment 0.2%</td>
</tr>
</tbody>
</table>
| diflorasone diacetate 0.05% | fluocinolone acetonide oint 0.005%

<table>
<thead>
<tr>
<th>Class II (potent)</th>
<th>Class V (mid-strength)</th>
</tr>
</thead>
<tbody>
<tr>
<td>mometasone ointment 0.1%</td>
<td>hydrocortisone butyrate cream 0.1%</td>
</tr>
<tr>
<td>halcinonide cream 0.1%</td>
<td>betamethasone valerate cream 0.1%</td>
</tr>
<tr>
<td>desoximetasone ointment 0.25%</td>
<td>triamcinolone acetonide cream 0.1%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class III (potent)</th>
<th>Class VI (mild)</th>
</tr>
</thead>
<tbody>
<tr>
<td>fluicaione ointment 0.005%</td>
<td>triamcinolone acetonide cream 0.025%</td>
</tr>
<tr>
<td>triamcinolone acetonide 0.5% cream</td>
<td>prednicarbate cream 0.05%</td>
</tr>
<tr>
<td>betamethasone valerate oint 0.1%</td>
<td>desonide cream, lotion 0.05%</td>
</tr>
<tr>
<td>betamethasone valerate cream 0.1%</td>
<td>fluocinolone acetonide 0.01% shampoo</td>
</tr>
</tbody>
</table>

Class VII (mild)

| Hydrocortisone 1% cream, 2.5% oint |

Case #1 (cont)

• Infant was sent for allergy evaluation to see if foods an issue
• Skin test negative to all common foods (soy, wheat, peanut, egg and milk)
• Skin test negative to select group of environmental allergens (dust mite, cat, dog and molds)
• Given course of cephalosporin for impetigo
• Changed to mild soaps and detergents, medium potency topical steroids for 2-3 days followed by traditional moisturizer and rash resolved

Associated Rashes

• Dominant ichthyosis vulgaris
• Keratosis pilaris
• Palmar hyperlinearity
• Pityriasis alba
• Dermatographism
• Lichen simplex chronicus
• Prurigo nodularis
• Angular cheilitis
• Dyshydrotic eczema
Dominant Ichthyosis Vulgaris

- Autosomal dominant
- More than 50% people with DIV have AD
- Xerotic (dry skin) with fine powdery scale
- Large firm adherent scale in fish like pattern
- Treatment – petroleum based moisturizer
- Keratinolytics (glycolic/lactic acid mixtures, salicylic acid and urea product)
- Extreme cases isotretinoin
- Topical steroids do not work well

Keratosis Pilaris

- Follicular papules due to follicular plugging
- Mostly on extensor surfaces of extremities
  - May be prominent on cheeks especially in children
  - Hands and feet spared
- Most common in childhood
  - Usually more concerning to the parents than to the patients themselves
- Asymptomatic
- Treatment – petroleum based moisturizer
  - Keratinolytics (glycolic/lactic acid mixtures, salicylic acid and urea product)
  - Topical steroids do not work well
Palmar Hyperlinearity

Pityriasis Alba
- Round/oval lesions
  - 1-5 cm in diameter
  - Form cluster
- More common in children than adults
- Affects cheeks, chin and mouth
  - Adults sometimes seen on limbs and trunk
- Scaly in nature
- Hypopigmentation of skin
  - When lesions resolve skin goes back to normal color (not true depigmentation of skin)
- Treatment: MOISTURIZE

Pityriasis Alba

Dermatographism
- Occurs in 4-5% of population
- More common in adolescents
- Wheal and erythema after minor stroking and pressure
- Wheal reaches maximal size in 6-7 minutes and resolves in 15 minutes
- Treatment: Antihistamines
Lichen Simplex Chronicus

- Chronic form of atopic dermatitis
- Tiny pinhead sized papules on skin
  - Become confluent plaque
  - Minimal scale except when on neck
- Frequently on flexor surface of extremities and neck (especially in women)
- Often mistaken for folliculitis
  - Papules can become fluid filled and weep due to repeated scratching

Folliculitis vs Eczema

Prurigo Nodularis

- Discrete nodular lesions
- Extensor surface of lower extremities
- Intensely pruritic
- Chronic mechanical trauma (itching/rubbing) results in thickening of skin
- Pigmentary changes can result from repetitive trauma
- Etiology unknown
- Difficult to treat. Must stop itching
Prurigo Nodularis

Angular Cheilitis
• Chronic inflammatory condition where angles of mouth are infected
• Usually associated with fungal (candida) or bacterial (staph) infection
• Most common cause is excessive wetness (lip licking/thumb sucking) or dryness
• Treatment is typically topical antifungal
  – Combination topical steroid/antifungal when significant perioral involvement

Angular Cheilitis

Dyshidrotic Eczema
• Clear tapioca like vesicles
• Affects fingers, palms and soles
• Secondary scaling, fissuring and lichenification
• Extreme pruritis
• No evidence that sweating plays role
• 50% have atopic background
• Treatment- high potency topical steroids with occlusive dressings
**Differential Diagnosis**

**Common Disorders**

- Nummular eczema
- Pityriasis Rosea
- Tinea corporis
- Perioral dermatitis
- Seborrheic dermatitis
- Psoriasis

- Scabies
- Polymorphous light eruption
- Papular Acrodermatitis of Childhood
- Contact dermatitis (allergic & irritant)

**Nummular Eczema**

- Coin shaped patches on the skin
- As lesions get older may clear in center or become scaly
  - Resembling ringworm or psoriasis at late stages
- Chronic condition with periods of worsening
- Cause unknown
- More common in winter
- **NO CURE.** Treatment is medium-high dose topical steroids.

**Nummular Eczema Case #2**

- 40 y/o woman presents with 2 week hx of erythematous rash on trunk
- **NO** preceding illness, but had changed detergent
- Discrete ovoid erythematous macules
- Itchy at times
- Went to urgent care and given course of medrol which had helped a rash in the past and no help
- Using Allegra and helps itching
Pityriasis Rosea
- Common, benign, self-limiting eruption
- Incidence higher in colder months
- Preceding viral like symptoms are common
- Initial lesion is the herald patch
- Subsequent patches follow Langer’s lines
- Within 7-14 days numerous papular salmon-pink lesion usually on the trunk and lower abdomen
- Treatment: NONE. Can treat itching with antihistamines and topical steroids.

Tinea Corporis
- Dematophyte infection of the skin
  - Most commonly caused by Trichophyton rubrum
  - Mildly pruritic
  - Small to large scaling, sharply marginated lesion
  - Annular configuration with concentric rings
  - Typically affects trunk, arms, legs and neck
    - Spare feet, hands and groin
  - Dx can be made by use of woods lamp or KOH stain
  - Treatment: Topical anti-fungal
Tinea Corporis

Perioral Dermatitis

- Affects skin around mouth
- Common in children and young women
- Small scaly bumps which form clusters around mouth
  - May also involve area around nose and eyes

Perioral Dermatitis

- Leading cause is use of corticosteroids on face
  - Topical, especially fluorinated
  - Inhaled
- Prolonged use of toothpaste with whitening and tarter control
- Treatment: Discontinue use of offending agent
  - Use of topical and/or oral doxycycline, tetracycline or minocycline daily for 6-8 wks

Perioral Dermatitis
Seborrheic Dermatitis

- Chronic inflammatory disease with characteristic patterns in different age groups
- 2-5% of population
- Yeasts *Malassezia* or *Pityrosporum ovale* causative factor

Psoriasis

- Red skin covered with silvery scale and inflammation
- Patches are circular to oval
- Typical areas are knees and elbows

Psoriasis

Another case of eczema?
Scabies!!!

- Caused by *Sarcoptes scabei* mite
- Spread by direct physical contact
- Symptoms appear 4-6 weeks after infection
- Intense itching
- Burrows/eczematous rash on examination
  - Sides of fingers/hands/wrists/genitalia
  - May be widespread especially in infants
- Treatment
  - Permethrin – 2 applications, 14 days apart
  - ALL family members need treatment
  - Boil all bedding/towels at same time
- Itching may persist for some time after treatment

Case #3

5 year old boy presents with erythematous, papular, pruritic rash on cheeks and arms. Noted after 1st soccer game of spring season.

Polymorphous light eruption

- Most common light induced skin disease
- Discrete erythematous papules and plaques
- Can be pruritic
- Occurs in sun exposed area
- Begins in spring and improves throughout summer
- Can tolerate small amounts of sun
- Typically improves with age

Polymorphous Light Eruption

- Treatment: Acute lesions-topical steroids for 2-3 days
- Prevention: Sun avoidance, UVA/UVB SPF >30 sunscreen
- Use of beta carotene supplement 40-120 mg/day
Polymorphous Light Eruption

- Viral mediated, EBV most common cause in US
- Brownish-red or copper-colored lesions with firm, flat top
- String of bumps may appear in a line
- Generally not itchy
- Rash may appear on the palms and soles
  - Does not occur on the back, chest, or belly area
  - One of the ways it is identified -- by the absence of the rash from the trunk and belly

Papular Acrodermatitis of Childhood (Gianotti-Crosti syndrome)

- 6 month old presents with diaper rash
- Ongoing for last 2-3 weeks
- Rash erythematous and blistering. Limited to diaper area
- Not responding to topical diaper creams
- NO change in diet
- Stools very loose currently, but normally firm
- Sent in for allergy evaluation for possible food allergy

Case #4

- 6 month old presents with diaper rash
- Ongoing for last 2-3 weeks
- Rash erythematous and blistering. Limited to diaper area
- Not responding to topical diaper creams
- NO change in diet
- Stools very loose currently, but normally firm
- Sent in for allergy evaluation for possible food allergy
Contact Dermatitis

- Inflammatory skin reactions arising from direct skin exposure to an external agent
- Affects patients of all ages
- Two forms, irritant and allergic
  - 80% of cases are irritant type
  - 20% are the allergic form
- Represents more than 90% of all occupational skin disease
- Can present as acute, subacute, or chronic dermatitis.

Irritant Contact Dermatitis

- Non-immunologic process from contact with agents that irritate or traumatize skin
- Does not require prior sensitization

Irritant Contact Dermatitis

- Can occur in any individual given exposure to appropriate amounts of irritants
  - More common in those with atopic dermatitis
- A cytotoxic event that can be caused by chemicals, lotions, detergents, creams, alcohols, or powders.
- Also triggered by environmental factors such as wetting, drying, perspiration, or temperature extremes
Irritant Dermatitis

Clinical Manifestations of Irritant Contact Dermatitis

- Mild irritants produce erythema, chapped skin, dryness, and fissuring
- Pruritis can range from mild to severe and pain is a common symptom when erosions and fissures are present
- Severe cases present with edema, serous oozing, and tenderness
- Potent irritants produce painful bullae within hours of exposure

Clinical Manifestations of Irritant Contact Dermatitis

- Rash usually restricted to the skin site directly in contact with offending agent
- Hands are the usual site for irritant contact dermatitis
  - Webs of the fingers being the first area affected.
- Face, especially the thin skin of the eyelids can be affected

Allergic Contact Dermatitis

- Type IV hypersensitivity reaction
  - Required prior sensitization
- Intensely pruritic rash
- Acute cases can usually be identified
- Chronic cases more difficult to identify
- New exposures typically induce a reaction, but can have a reaction to a product used for months prior
Physical Findings of Allergic Contact Dermatitis

- Papular erythematous rash with indistinct margins distributed in the area of exposure
- Severe cases can result in vesicles and serous oozing.

Contact Dermatitis: Distribution and Material

- Scalp and ears: Shampoo, hair dyes, topical medicines, metal earrings, eyeglasses
- Eyelids-Nail polish (transferred by rubbing), cosmetics, contact lens solution, metal eyelash curlers
- Face-Airborne allergens (poison ivy from burning leaves, ragweed), cosmetics, sunscreens, acne medicines (e.g., benzoyl peroxide), after-shave lotion
- Neck-Necklaces, airborne allergens (ragweed), perfumes, after-shave lotion
- Trunk-Topical medication, sunscreens, poison ivy, plants (phototoxic reactions), clothing undergarments (e.g., spandex bra, elastic waistband), metal belt buckles
- Axillae-Deodorant (axillary vault), clothing (axillary folds)
- Hands-Soaps and detergents, foods, spices, poison ivy, industrial solvents and oils, cement, metal (pots, rings), topical medications, rubber gloves in surgeons
- Arms-Same as hands; watch and watchband
- Genitals-Poison ivy (transferred by hand), rubber condoms
- Anal-region hemorrhoid preparations (benzocaine, nupercaine)
- Lower legs-Topical medication (benzocaine, lanolin, neomycin, parabens), dyes in socks
- Feet-Shoes (rubber or leather), cement spilling into boots

Patch Testing

- Gold standard for confirming or detecting contact allergens
- Only 10-20% of patient with ACD can be accurately diagnosed without patch testing
- Typically done in Allergy or Dermatology clinic

T.R.U.E. Test Allergens

Panel 1.2
- Nickel Sulfate
- Wool Alcohols
- Neomycin Sulfate
- Potassium Dichromate
- Caine Mix
- Fragrance Mix
- Colophony
- Paraben Mix
- Negative Control
- Balsam of Peru
- Ethylenediameine
- Dihydrochloride
- Cobalt Dichloride

Panel 2.2
- p-tert-Butylphenol
- Formaldehyde Resin
- Epoxy Resin
- Carba Mix
- Black Rubber Mix
- Cl+ Me- Isothiazolinone (MCI/MI)
- Quaternium-15
- Mercaptobenzothiazole
- p-Phenylenediamine
- Formaldehyde
- Mercapto Mix
- Thimerosal
- Thiuram Mix

Panel 3.2
- Diazolidinyl urea
- Quinoline mix
- Tixocortol-21-pivalate
- Gold sodium thiosulfate (Metal)
- Imidazolidinyl urea
- Budesonide
- Hydrocortisone-17-butyrate (Steroid)
- Methyldibromo glutaronitrile (Preservative)
- Bacitracin (Antibiotic)
- Parthenolide (Plant allergen)
- Disperse blue 106 (Azo dye)
- Bronopol (Antimicrobial agent-preserve)
T.R.U.E. Testing

Patch Test Interpretation

Irritant Reaction
- A 3+ positive patch test reaction with vesicles and bullae
- A 2+ positive patch test reaction with erythema and vesicles
- A 1+ positive patch test reaction with erythema

Most Common Triggers

- Nickel - Jewelry, metal and metal-plated objects
- Paraphenylenediamine - Dyed textiles, cosmetics, hair dyes, printing ink, photodeveloper
- Quaternium-15 - Preservative in cosmetics and skin care products, household polishes and cleaners, industrial products
- Neomycin - Topical antibiotics
- Thimerosal - Preservative in contact lens solutions, cosmetics, nose and ear drops, injectable drugs
- Formaldehyde - Plastics, synthetic resins, glues, textiles, construction material
- Ethylenediamine - Topical medications, eyedrops, industrial solvents, anticorrosive agent
- Potassium dichromate - Cement, chrome-tanned leather, welding fumes, cutting oils, antitrust paints
- Thiuram mix - Rubber products, adhesives, pesticides, drugs

Most Common Triggers-Nickel

- Prevalence of 10-15%
- More common in females
- Likely secondary to sensitization with ear piercing
- Cobalt sensitivity generally occurs in association with nickel
- Isolated cobalt sensitivity is rare
Nickel Allergy

Most Common Triggers - Paraphenylenediamine
- Common sensitizer found in hair dyes and other hair products

Most Common Triggers - Neomycin
- Usually seen in the clinical setting of ulcer treatment
- Topical medications containing aminoglycoside antibiotics common cause

Most Common Triggers - Thiuram
- Periocular dermatitis from makeup sponge containing thiuram
- Also found in goggles and masks
Most Common Triggers-Chromate

- Found in leather, especially shoes where chromium salts are used in the tanning process
- Dermatitis worsens with sweat
- Chromate is leached out of the leather
- Seen as hand or foot dermatitis
- Chromate is leached out of the leather
- Dermatitis worsens with sweat
- Chromate is leached out of the leather
- Seen as hand or foot dermatitis
- Most common sensitizer in men in western world

Poison Ivy

- Oleoresin(Urishiol) found in poison ivy, poison oak, and poison sumac
- Acute eczematous reaction with linear lesion representing the area of contact with the plant leaves
- Lesions can occur at other body sites due to transfer of the plant resin by the hand
- Lesions may appear at new sites 2-3 days after the first appearance of the rash
- Urishol is also found in cashew nut trees, japanese laquer, ginko biloba, and mango skin and ingestion of cashew or contact with mango skin can cause the same rash

Case #4 (Cont)

- Skin tested to common foods and all negative
- Distribution of rash seemed consistent with due dermatitis from diaper
- Changed to dye free diapers and rash resolved without any need for topical therapy
Allergic Diaper Dermatitis

- Convex areas of groin, sparing folds
- Disperse blue dye common allergen in diapers
- Bath products also common cause
- Diaper dye- edges of rash squared off
- Bath product- extends out of diaper region

Allergic vs Candidal Dermatitis

Treatment

- Avoidance of the offending agent
- Cool compresses can help with pruritis
- Acute weeping eruptions- drying agents such as topical aluminum sulfate-calcium acetate
- Chronic eruptions- emollients, lubricants and moisturizers can be used
  - should be non-sensitizing and fragrance free
- Rarely antibiotics are needed for secondary infection
Treatment

- Corticosteroids are most effective in treating localized dermatitis.
- Low potency agents are recommended for thin skin vs. higher potency for thick, lichenified areas.
- Oral, IV, or IM corticosteroids only when severe or greater than 25% of the body surface area is affected.
  - Prednisone or equivalent at 1 mg/kg/day for 3-7 days with taper over 7-14 days.
  - May need prolonged course up to 1 month if severe.

Summary

- Skin manifestations of allergic disease are varied.
- Knowledge of the patterns, morphology of lesions and associated features is helpful.
- Thorough history and physical exam is important; testing rarely indicated.