ALLERGIC CONTACT DERMATITIS IN ATOPICS

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When to suspect Allergic contact dermatitis?

Look for the clues ...
Chronic eczema unresponsive or worsen by common therapies
Localized new onset dermatitis
New onset AD in "older patients"
Atypical locations for AD

eyelid, perioral, scalp, neck, extensor surfaces, hands and feet
Geometric and/or symmetric eczema
When to suspect ACD

• Photo or airborne pattern
Occupational/sport/activity relationship
1142 children patch tested from 1/2015 to 12/2015

**AD patients**

Were 1.3 years younger (10.5 vs 11.8 years; \( P < .001 \))

Had longer history of dermatitis (3.5 vs 1.8 years; \( P < .001 \)).

Patients with **generalized distribution** were the most likely to be patch tested (OR, 4.68; 95% CI, 3.50-6.30; \( P < .001 \)).

Had higher frequency of reactions to
- cocamidopropyl betaine
- wool alcohol and lanolin
- tixocortol pivalate
- parthenolide

Had lower frequency of reactions to
- methylisothiazolinone
- cobalt
- Potassium dichromate
Retrospective analysis of children <17 years patch tested between 1996 and 2013

Sensitization prevalence not different in AD vs ACD

Children with atopic dermatitis reacted more often to:

- lanolin alcohol (30% pet., $p = 0.030$) and Amerchol L-101 ($p = 0.030$)
- fragrances [fragrance mix I ($p = 0.048$) and Myroxylon pereirae ($p = 0.005$)]
- cocamidopropyl betaine
• 6708 patients < 16 years in 8 years.
• No difference in prevalence of ACD in patients with and without AD
• Patients with AD
  • Nickel sulfate (16.87%)
  • cobalt chloride (7.85%)
  • potassium dichromate (6.85%)
  • neomycin sulfate (3.52%),
  • Myroxylon pereirae (3.07%)
  • fragrance mix (2.56%)
  • lanolin alcohols (2.17%)
  • MCI/MI (2.06%)
  • sesquiterpene lactone mix (1.72%).
• Non AD patients had higher nickel, PTBFR and PPD
Children with atopic dermatitis are equally as likely as those without to have >1RPPT.

TRUE test is a good screening tool can detect almost 70% RPPT in children.

Of those NOT present on the TRUE test that may be relevant:

- Propylene glycol
- Decyl glucoside
- CAPB
- IPBC
- FMII
- Carmine
- Propolis
- a tocopherol
- ACD higher on atopics than controls (89% vs 66%)
- EASI > 10 associated with more than 3 PPTR
Severity influences risk of sensitization in AD patients

- Higher contact sensitization in atopic patients with severe disease (60.9%) compared with those with moderate (37.5%) or mild (30%)
• AD and non AD patients seem to have similar rates of contact allergy.
• Higher contact sensitization when patients have more severe disease and higher # PTTR
• Allergens higher in Atopics
  – Fragrances
  – Cocamidopropyl betaine
  – Lanolin
  – Tixocortol
  – Parthenolide
ACD?

PEAS X 2 MO

PATCH TEST

TRUE TEST

AVOIDANCE X 2

SUSPECT SCD

DIET

AD PATIENT

COMPREHENSIVE
## SAMPLE LIST OF SAFE PRODUCTS

<table>
<thead>
<tr>
<th>Product type</th>
<th>Brand</th>
<th>Product</th>
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<tbody>
<tr>
<td>Cleansers</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Beba</td>
<td>Dry Skin Formula Moisturizing Body Bar</td>
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<tr>
<td></td>
<td></td>
<td>CeraVe Hydrating Cleanser</td>
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<tr>
<td></td>
<td></td>
<td>CeraVe Moisturizing Cleanser Unscented</td>
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<td></td>
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<td>Facial Cleanser</td>
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<td></td>
<td>Dermalab</td>
<td>Wash It Cleansing Bar for Sensitive Skin</td>
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<tr>
<td></td>
<td></td>
<td>Liquid Cleanser for Sensitive Skin</td>
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<tr>
<td></td>
<td>Magick Botanicals</td>
<td>Unscented Bar Soap</td>
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<tr>
<td></td>
<td>Neutrogena</td>
<td>Ultra Gentle Hydrating Cleanser</td>
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<td>Vanicream Gentle Facial Cleanser</td>
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<td>Vanicream Moisturizing Cream</td>
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<td></td>
<td>Therapeutic Hand Cream</td>
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<tr>
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<td>VMV Hypoallergenics</td>
<td>Moisture Rich Creamy Cleansing Milk for Dry Skin</td>
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<tr>
<td>Moisturizers</td>
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<td>CeraVe</td>
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<td>Therapeutic Hand Cream</td>
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<td>Cetaphil</td>
<td>Cetaphil Intensive Moisturizing Cream with Shea Butter</td>
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<td>Body Lotion for dry sensitive skin</td>
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<td>Intensive Hand Cream</td>
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<td></td>
<td>Moisturizer Intense</td>
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<td>Professional Repair Extremely Dry Skin Lotion</td>
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<td>Soothing Baby Oil</td>
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<td>Moisturizing cream</td>
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<td>Magick Botanicals</td>
<td>Oil Free Moisture Lotion</td>
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<td>Neutrogena</td>
<td>Norwegian Formula Hand Cream Fragrance-Free</td>
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<td>Emollient for Severely Dry Skin</td>
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<td>TriCalm</td>
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<td>Clinical Repair Cream</td>
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<td>Cheryl Lee MD Sensitive Skin Care</td>
<td>TrueLips Relieve and Protect Ointment</td>
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<td>Vaniply</td>
<td>Vaniply Ointment Dry Skin Care for Sensitive Skin</td>
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<tr>
<td></td>
<td>Vaseline</td>
<td>Vaseline Petroleum Jelly</td>
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<td>Vaseline Petroleum Jelly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hydrabalance Smart Moisturizer for Combination Skin</td>
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</tbody>
</table>

- Try the simplified product list for at least 8 weeks!!

AD PATIENT

ACD?

PEAS X 2 MO

PATCH TEST

TRUE TEST

AVOIDANCE X 2

SUSPECT SCD

DIET

COMPREHENSIVE
Patient Teaching

• Treatment = AVOIDANCE, AVOIDANCE, AVOIDANCE
• Give list of safe products to use from CAMP database.
  – Contactderm.org
• Give handouts about location and history of positive allergens.
  – thedermatologist.com
  – truetest.com
  – Dormer.com/allergens
  – Dermatitisacademy.com
• Make a plan of treatment and follow up in 6 weeks.
Simple and Free Update: Pre-Emptive Avoidance Strategy (PEAS) has changed! Therefore, Simple and Free products are currently being updated. Thank you for your patience.

Simple formulas – Free of the top 10 allergens and cross reactors
Safer for Baby, Safer for you

Top 10 Pediatric Product Allergens

1. Fragrance/BOP
2. Neomycin/Bacitracin
3. Wool wax/Amerchol/lanolin
4. Formaldehyde/bronopol/Q15
5. MCI and MI
6. Propylene glycol
7. Cocamidopropyl betaine
8. Glucosides
9. Propolis
10. Compositae

Nickel Sulfate/Cobalt Chloride – top sensitizers
Thank you!!!!
COCAMIDOPROPYL BETAINE

- Derived from coconut oil & dimethylaminopropylamine (DMAPA)
- Used as a surfactant and foaming agent in shampoos, conditioners, body washes, hair dyes, laundry detergents, hand soaps, toothpastes, cleaning products.
- Incidence between 3% to 7.2%
- Higher incidence in patients with AD
CONTROL POMADE is a unique, water-soluble formula with conditioners and hormones to keep hair healthy. It is designed to neutralize styling polymers to remove any feeling of dryness or roughness. The result is a healthy formula that leaves hair soft, shiny, and smooth—a great choice for your styling routine.

How to Use:
1. Apply to hair in a styling gel to set in place.
2. Rub gently with fingers and comb through hair with a thin-tooth comb to define curls and add body to your hair.
3. Formal results: Hair is soft and shiny—style it in place, staying flexible, and定义 curly. Soft curls are beautifully defined, but not sticky. Curls are beautifully defined.
WE PREFER OINTMENT RATHER THAN CREAMS
Wool Alcohols- lanolin

• Derived from secretions of the sebaceous glands of sheep and functions as a protective coating on wool
• Lanolin alcohols = aliphatic alcohols, sterols (including cholesterol), and trimethyl sterols
• patch testing recommend testing for Amerchol 101 and mix wools alcohols to decrease FN reactions. *
• Common allergen in patients with hx of atopic dermatitis
• Emollient
• Present in moisturizing creams, medications
• Personal care products

* Matthieu L, Dockx P. Contact Dermatitis 1997;36:150–1.
FRAGRANCE & BALSAM OF PERU

- **Fragrance mix I**
  - cinnamic alcohol
  - cinnamic aldehyde
  - hydroxycitronellal
  - amylcinnamaldehyde
  - geraniol
  - euginol
  - isoeuginol
  - oaksosse

- **Fragrance mix II**
  - Lyral
  - Citral
  - Citronellol
  - Farnesol
  - Coumarin
  - hexyl cinnamic aldehyde

Scents and Flavoring agents
BALSAM OF PERU

- Natural extract from bark of *Myroxylon pereirae*
- Mixture different contact allergens
  - cinnamenein oils (which contain cinnamates, eugenol, and vanillin)
  - benzoic acid derivatives
  - coniferin derivatives
- Marker for fragrance allergy
- Causes hand and face dermatitis
- Commonly in spices and flavoring agents and in cosmetic, *fragrances*, and medicinal products
- Can cause systemic contact dermatitis
- Most common causative foods in one adult study*
  - Tomatoes (33%), citrus fruits (30%), spices (23%), colas (17%),
    chocolate (10%), chili (10%)
- Specific allergens in tomatoes: cinnamic alcohol and coniferyl alcohol

*Salam et al. JAAD 2001:45; 3;77-381*
Fragrance-Free

VS.

Unscented
HIDDEN SCENT

Benzyl Alcohol
used as a preservative in multiple Fragrance free products
Tixocortol Pivalate

• Patch test allergen for Class A of topical corticosteroids
  – Hydrocortisone acetate (OTC TCS)
• Cross reacts with Class D2
  – the other HC, butyrate and valearate
• Higher frequency in patients with Atopic dermatitis
• Suspect
  – AD not responding or worsened by use of TCS
  – In adult patient with chronic ulcers and patient with puritus ani- hx of hemorrhoids.
# TIXOCORTOL PIVALATE

<table>
<thead>
<tr>
<th>Structural Class</th>
<th>Class A: Hydrocortisone Type</th>
<th>Class B: Triamcinolone Acetonide Type</th>
<th>Class C: Betamethasone Type</th>
<th>Class D1: Betamethasone Dipropionate Type</th>
<th>Class D2: Methylprednisolone Acetonide Type</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLASS 1: SUPERPOTENT</strong></td>
<td>Oral: Clobetasol, hydrocortisone, prednisolone, prednisone</td>
<td>Oral: Budesonide, Triamcinolone</td>
<td>Oral: Betamethasone, Dexamethasone</td>
<td>Oral: Betamethasone dipropionate 0.01%, 0.02%, 0.1%, 0.5%</td>
<td>Oral: Hydrocortisone 0.1%, 0.2%, 1%</td>
</tr>
<tr>
<td><strong>CLASS 2: HIGH POTENT</strong></td>
<td>Oral: Clobetasol, hydrocortisone, prednisolone, prednisone</td>
<td>Oral: Budesonide, Triamcinolone</td>
<td>Oral: Betamethasone, Dexamethasone</td>
<td>Oral: Betamethasone dipropionate 0.01%, 0.02%, 0.1%, 0.5%</td>
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</tr>
<tr>
<td><strong>CLASS 3: UPPER MID-STRENGTH</strong></td>
<td>Oral: Clobetasol, hydrocortisone, prednisolone, prednisone</td>
<td>Oral: Budesonide, Triamcinolone</td>
<td>Oral: Betamethasone, Dexamethasone</td>
<td>Oral: Betamethasone dipropionate 0.01%, 0.02%, 0.1%, 0.5%</td>
<td>Oral: Hydrocortisone 0.1%, 0.2%, 1%</td>
</tr>
<tr>
<td><strong>CLASS 4: MID-STRENGTH</strong></td>
<td>Oral: Clobetasol, hydrocortisone, prednisolone, prednisone</td>
<td>Oral: Budesonide, Triamcinolone</td>
<td>Oral: Betamethasone, Dexamethasone</td>
<td>Oral: Betamethasone dipropionate 0.01%, 0.02%, 0.1%, 0.5%</td>
<td>Oral: Hydrocortisone 0.1%, 0.2%, 1%</td>
</tr>
<tr>
<td><strong>CLASS 5: LOWER MID-STRENGTH</strong></td>
<td>Oral: Clobetasol, hydrocortisone, prednisolone, prednisone</td>
<td>Oral: Budesonide, Triamcinolone</td>
<td>Oral: Betamethasone, Dexamethasone</td>
<td>Oral: Betamethasone dipropionate 0.01%, 0.02%, 0.1%, 0.5%</td>
<td>Oral: Hydrocortisone 0.1%, 0.2%, 1%</td>
</tr>
<tr>
<td><strong>CLASS 6: LOW POTENT</strong></td>
<td>Oral: Clobetasol, hydrocortisone, prednisolone, prednisone</td>
<td>Oral: Budesonide, Triamcinolone</td>
<td>Oral: Betamethasone, Dexamethasone</td>
<td>Oral: Betamethasone dipropionate 0.01%, 0.02%, 0.1%, 0.5%</td>
<td>Oral: Hydrocortisone 0.1%, 0.2%, 1%</td>
</tr>
<tr>
<td><strong>CLASS 7: LEAST POTENT</strong></td>
<td>Oral: Clobetasol, hydrocortisone, prednisolone, prednisone</td>
<td>Oral: Budesonide, Triamcinolone</td>
<td>Oral: Betamethasone, Dexamethasone</td>
<td>Oral: Betamethasone dipropionate 0.01%, 0.02%, 0.1%, 0.5%</td>
<td>Oral: Hydrocortisone 0.1%, 0.2%, 1%</td>
</tr>
</tbody>
</table>

**ADDITIONAL INFORMATION:**
- Oral: Clobetasol
  - Triamcinolone acetate
  - Methylprednisolone, prednisolone
- Oral: Budesonide, Triamcinolone
- Oral: Betamethasone, Dexamethasone
- Oral/IM: Betamethasone
- Oral/IV: Hydrocortisone

**STRUCTURE:**
- No substitutions in the D ring, except C17, C17-ethyl, C16, C16-methyl substitution
- C16, C16-ethyl substitution
- C17, C17-ethyl substitution
- C18, C18-ethyl substitution
- C19, C19-ethyl substitution

**CROSS-REACTIONS:**
- Cross-reacts with D2
- Budesonide specifically cross-reacts with D2

**PATCH TEST SUBSTANCE:**
- Triamcinolone-21-pivalate
- Budesonide, Triamcinolone acetate

Natural is not always better
sesquiterpene lactones
COMPOSITAE (ASTERACEAE) FAMILY (sesquiterpene lactone)

- **Ornamental flowers**
  - Sunflower, chrysanthemum, daisy, aster, marigold, dahlia...

- **Foods**
  - Lettuce, artichoke

- **Wild-growing**
  - Ragweed, *Echinacea*, tansy, mugwort, chamomile, dandelion, yarrow, sagebrush