How I Approach Contact Dermatitis

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I have no conflicts of interest

Importance of Contact Dermatitis

• Approximately 72 million Americans suffer from at least one episode of contact dermatitis each year

• Direct costs associated with the treatment of CD is estimated to be 1.6 billion dollars
  Over half ($747 million) is due to prescription drug costs
  OTC drugs not included in the estimate

• 10.6 million office visits and 1.7 million visits to emergency rooms

• Total outpatient care more than $870 million
  Indirect costs estimated to be $566 million due to loss of productivity
  • $295 million lost workdays by affected person
  • $99 million by caregiver workdays
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Importance of Contact Dermatitis

- Among the 22 studied skin disease categories the five most economically burdensome are skin ulcers and wounds, melanoma, acne, non melanoma skin cancers and contact dermatitis

JAAD 2006; 55: 490

Tools for Diagnosis

- History and physical examination
  - Good for irritancy and contact urticaria
  - Not reliable for allergic contact dermatitis
- Use test (ROAT)
- Patch test to own products
- TRUE test
- Expanded trays

Use Test

- Only for products meant to be put on the skin and stay there
- Apply five times daily for five days
- Positive if pink and itchy
- Does not identify the
### TRUE test allergens

<table>
<thead>
<tr>
<th>TRUE test allergens</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Nickel sulfate</td>
<td>Colophony</td>
</tr>
<tr>
<td>Wool alcohols</td>
<td>Paraben mix</td>
</tr>
<tr>
<td>Neomycin sulfate</td>
<td>Negative control</td>
</tr>
<tr>
<td>Potassium dichromate</td>
<td>Balsam of Peru</td>
</tr>
<tr>
<td>Caine mix</td>
<td>Ethylenediamine dihydrochloride</td>
</tr>
<tr>
<td>Fragrance mix</td>
<td>Cobalt Dichloride</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>P-tert-Butylphenol formaldehyde resin</td>
<td>Methylidibromo diutanonitrile</td>
</tr>
<tr>
<td>Epoxy resin</td>
<td>P-Phenylenediamine</td>
</tr>
<tr>
<td>Carba mix</td>
<td>Formaldehyde</td>
</tr>
<tr>
<td>Black rubber mix</td>
<td>Mercapto mix</td>
</tr>
<tr>
<td>Cl+ Me- isothiazolinone (MCI/MI)</td>
<td>Thimerosal</td>
</tr>
<tr>
<td>Quatermium-15</td>
<td>Thiuram mix</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Diazolidinyl urea</td>
<td>Hydrocortizone-17-butyrate</td>
</tr>
<tr>
<td>Quinoline mix</td>
<td>Mercaptobenzothiazole</td>
</tr>
<tr>
<td>Tixocortol-21-pivalate</td>
<td>Bacitracin</td>
</tr>
<tr>
<td>Gold sodium thiosulfate</td>
<td>Parthenolide</td>
</tr>
<tr>
<td>Imidazolidinyl urea</td>
<td>Disperse blue 106</td>
</tr>
<tr>
<td>Budesonide</td>
<td>2-Bromo-2-nitropropane-1, 3-diol (Bronopol)</td>
</tr>
<tr>
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<td></td>
</tr>
</tbody>
</table>
Extended Patch Testing

- Available only in certain testing centers
- Expanded standard series and specialty trays
- Usual number used is in the 70 to 100 allergens
- Some are common and not found on the screening TRUE test
- Especially important in occupational

Approach to Evaluation

- Isolated allergic contact dermatitis – take history and treat
- Recurrent or chronic itchy eruptions – an important part of treatment is prevention via allergen avoidance

Approach to Evaluation

- I tell all comers there is a 30 to 50% chance of finding the allergen if we pursue patch testing
- Relevant positive patch tests leading to clearance of long-standing, treatment resistant or oral steroid dependent dermatitis that has eluded diagnosis despite biopsies, blood test, scratch tests, and TRUE tests still remains at 30 to 50% in appropriate candidates
Threshold for Patch Testing

- Obvious contact dermatitis
  - Recurrent
  - Unresponsive to treatment
  - Requiring repeated courses of systemic or potent topical steroids

Threshold for Patch Testing

- Suspect contact dermatitis
  - Seasonal
  - Distribution
  - Work-related
  - Biopsy findings suggestive

Threshold for Patch Testing

- Chronic hand eczema, facial or eyelid eczema, nummular eczema, generalized eczema
- Endogenous disease (atopy, stasis, psoriasis) unresponsive to usual modes of therapy or atypical in severity, location
- “Adult-onset” atopic dermatitis
Threshold for Patch Testing

Red Flags

• Exclude a possible but unlikely cause
• Complaints of multiple chemical sensitivities or systemic symptoms related to environment
• “Prove it is this”

TRUE Test

Common Allergens Not Tested

- Fragrance mix II
- Textile allergens-finishers
- Most textile dyes
- Cinnamic aldehyde
- Cocamidopropyl betaine
- Aminodiamine

- Propylene glycol
- Iodopropynyl butylcarbamate
- DMDM hydantoin
- Acrylates
- Mixed dialkyl thioureas

TRUE TEST

- Not often relevant but present
  - Thimerosal
  - Gold
- Infrequently positive
  - Ethylenediamine dihydrochloride
  - Wool alcohol
  - Parabens mix
- May miss fragrance

JAAD 2001; 45: 313
Patch Testing

TRUE vs Supplemental

- 898 patients were tested in a referral practice
- 68% had at least one positive reaction
- If they had been tested by the TRUE test
  – 25% would have been fully evaluated
  – 23% would have had none of their allergens identified
  – 52% would have been partially evaluated

JAAD 2003; 49: 65

Patch Testing

TRUE vs Supplemental

- 2088 patients were tested in a referral practice
- 66% had at least one positive reaction
- If they had been tested by the TRUE test
  – 27.6% would have been fully evaluated
  – 22% would have had none of their allergens identified
  – 50% would have been partially evaluated

Contact Dermatitis 2012;66: 154

Patch Testing

- If TRUE test screen negative but persistent eruption, RETEST to NACDG standard and supplemental trays as indicated
- 43 patients previously tested
  – 27 (63%) positive
    • 17 to standard allergen
    • 16 to supplemental

JAAD 1997; 36:914
Utility of TRUE test

- 183 patients from four private offices
- Patients with reactions that had present relevance (32%) → allergen avoidance and f/u (consider expanded testing)
- Patients with a final diagnosis other than contact dermatitis (44%) → treat and f/u (consider expanded testing)
- Patients suspected to have ACD to other allergens (24%) → expanded testing

Conclusions

- TRUE test is an adequate screening test:
  - Allows more patients to be tested
  - Able to triage a significant number of patients
  - Identify a sub-group of patients to do expanded testing

Conclusions

- Caveats:
  - Potential allergens may be missed especially fragrance and rubber additives
  - More extensive testing in patients whose dermatitis does not resolve with allergen avoidance or appropriate treatment
  - Patients with potential occupational exposures should have supplemental testing