Occupational Contact Dermatitis

ALLSA Congress, Port Elizabeth, September 2017

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Overview

• Common occupational skin diseases
• Evaluating a patient with possible occupational skin disease
• Managing occupational skin disease
  • Treatment
  • Referral
Occupational skin disease

**IRRITANT**
- Acute
- Chronic Irritant contact dermatitis
- Allergic contact dermatitis (Type IV)

**ALLERGIC**
- Protein contact dermatitis
- Immunologic contact urticaria (Type 1)

**OTHER**
- Non-immunologic contact urticaria
- Skin cancer
- Acne
- Infections
- Pigmentation disorders
Pathophysiology allergic contact dermatitis: Type IV hypersensitivity

Small haptens penetrate the skin. Initiate production of pro-inflammatory cytokines and chemokines.

Hapten presented on Major Histocompatibility Complex to naïve T-cell.

Re-exposure to same haptens results in activation of hapten-specific T cells in the skin.

Inflammation leading to characteristic skin lesions.

Patch test for delayed hypersensitivity

Source: Saito et al, 2016
Pathophysiology contact urticaria syndrome: Type I hypersensitivity

Allergen exposure leads to production of specific IgE

Subsequent exposures result in degranulation of mast cells with release of histamine, cytokines etc.
High risk occupations for occupational contact dermatitis
Common allergens
Common irritant exposures at work

- Wet work
- Frequent hand washing
- Use of occlusive gloves
- Exposure to soaps/alkalis
- Exposure to acids
- Exposure to solvents
- Mechanical irritation (friction)
Evaluating a patient with possible occupational dermatitis
Step 1: Personal and occupational history

• Pre-existing skin or atopic conditions

• When did symptoms start? How does rash present? Associated Type 1 allergy symptoms?

• Does condition improve with time away from work, and worsen on return to work?

• Other exposures (hobbies, second job, household chores etc)
Occupational history

• Important to obtain detailed description of tasks

• Ascertain presence of chemical hazards, particularly known allergens

• Consider presence of irritants in the workplace:
  • Wet work
  • Occlusive gloves
  • Frequent handwashing
  • Detergents/soaps/solvents/acids/alkalis
  • Mechanical irritants (friction)
Step 2: Clinical examination

• Skin examination
• Other systems as necessary
# Distinguishing irritant from allergic contact dermatitis

<table>
<thead>
<tr>
<th>Chronic irritant contact dermatitis</th>
<th>Allergic contact dermatitis</th>
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<tbody>
<tr>
<td>Occurs after prolonged contact with irritants (days to months)</td>
<td>Delayed hypersensitivity reaction – usually appears approximately 24 hours after exposure to allergen</td>
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<tr>
<td>Distribution tends to be limited to site of irritant exposure. May affect web spaces with wet work.</td>
<td>May be in a distribution of direct contact with allergen, but may ‘spill’ beyond. May appear at distant sites</td>
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<tr>
<td>Tends to present more as dry, fissured skin with burning rather than itch</td>
<td>Acute presentation has hallmarks of acute eczema – erythema, vesicles, itch. Chronic includes hyperpigmentation, lichenification</td>
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<tr>
<td>No activated T-cells: Negative patch tests</td>
<td>Activated T-cells: Positive patch test to a relevant contact allergen</td>
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Step 3: Patch testing for delayed hypersensitivity

- On the back
- Commercial allergens & work agents

Contra-indications:
- Active dermatitis on back
- Immunosuppressive treatment
- Recent tan/sunburn
- (Pregnancy)
- (Breastfeeding)
Patch test reading

• Left in situ 48 hours
• Read at 72 hours

• Relevance of positive reactions

Source: www.smartpractice.com
Step 4: Other special investigations

- Biopsy
- Fungal scraping

To exclude:
- Psoriasis
- Tinea manuum
Prick prick testing & specific IgE

• Not for allergic contact dermatitis

• Performed rarely as protein contact dermatitis and contact urticaria are far less common than contact dermatitis

• Suggested by history of immediate reaction
  • itch, wheal & flare
Step 5: Workplace assessment

• Difficult to do risk assessment for skin exposure
  • No methods for measuring skin exposure directly
  • Incomplete data about safe exposure levels
  • Time consuming to do as wide range of chemicals and tasks, and toxicology may not be obvious
Management of occupational skin disease
Management of the patient

• Avoidance of irritant exposures

• Allergen avoidance

• Topical steroids: Potent (Dovate) weaning to milder (Lenovate/Persivate)

• Emollients: Cetomacrogol/HEB preferable to aqueous cream
Avoiding irritant exposures

• Avoid soaps and grit cleansers – rather wash with emollients
  • For healthcare workers – alcohol sanitiser only unless hands visibly soiled

• Frequent application emollients
  • Barrier creams do not prevent absorption of chemicals

• Try to ensure hands are dry in gloves
  • Wear cotton liners inside occlusive rubber gloves. Replace liners as soon as they become wet (will need several pairs)

• Wear gloves above the elbow for wet work, not short gloves

• Avoid direct contact with solvents, alkalis, acids
When to refer for specialist assessment?

- Contact dermatitis does not improve with usual treatment and irritant avoidance.

- History and examination suggest exposure to allergens rather than irritants, and this warrants further investigation.

- For compensation purposes or workplace interventions.
Take home messages

• Always consider occupation in hand dermatitis or exposure-pattern dermatitis.

• Start by addressing irritant exposures and appropriate steroid and emollient use

• Refer/investigate further if not responding to appropriate treatment & irritant avoidance in a couple of months; if recurrent episodes; or if concerning history.

• Allergen avoidance and job modifications mainstay of treatment for allergic contact dermatitis.
Referral/advice centres for assistance with occupational diseases

• Cape Town
  • Groote Schuur Hospital (E16) Occupational Medicine Clinic (specify Dermatology for skin cases), (021) 404 4369
  • Tygerberg Hospital, Respiratory Clinic, (021) 938 5524

• Johannesburg
  • National Institute of Occupational Health, Braamfontein, (011) 712 6400

• Durban
  • King Edward Hospital, Occupational Medicine Clinic, (031) 360 3512/3 or (031) 260 4507
Useful websites

- [www.labour.gov.za](http://www.labour.gov.za)
- [www.hse.gov.uk](http://www.hse.gov.uk)
- [www.cdc.gov](http://www.cdc.gov)
References


• Personen et al. Patch test results of the European baseline series among patients with occupational contact dermatitis across Europe – analyses of the European Surveillance System on Contact Allergy Network 2002-2010. Contact Dermatitis 2015; 72:154-163