

**University
of Basel**

Diagnosing allergic contact dermatitis

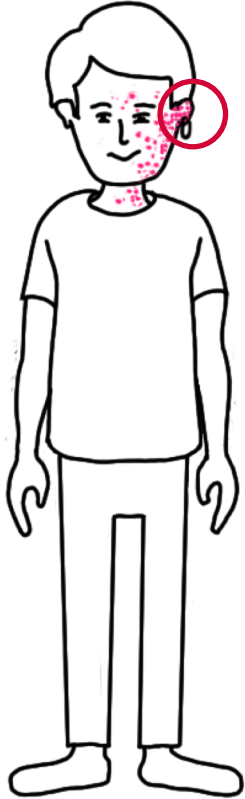
Prof. Andreas J. Bircher

Anamnesis

- Detailed medical history
- Onset and evolution of eczema
- Contact with potential triggers
- Family history (atopic background suspected)
- Known allergies



Clinical examination – Localisation



Allergic dermatitis

Observed where the triggering substance acts, may spread to nearby areas



Irritant dermatitis

More sharply restricted to the site of exposure



Atopic dermatitis

Typically occurs in the face and at flexures.

Clinical examination – Stage



Acute stage:
Acute eczema present with erythema, papules and vesicles, oozing and erosions.

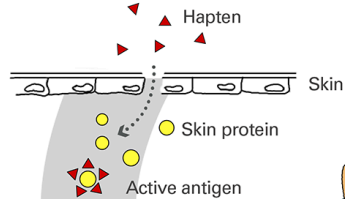


Chronic stage:
Chronic eczema show erythema, thickened so-called lichenoid skin and large scales.

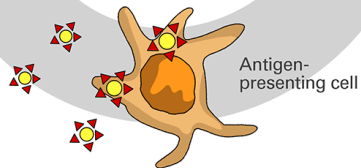
Clinical examination – Mechanism

1st allergen exposure

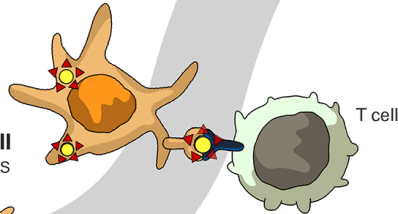
1. A **hapten** penetrates the outer skin layers and complexes with a skin protein to build a complete, **active antigen**.



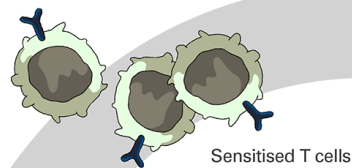
2. An **antigen-presenting cell** then takes up and processes the intruder.



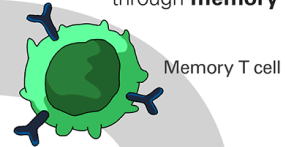
3. It presents it to **T cells** on its cell surface proteins.



4. Multiple sensitised **T cell clones** are generated.

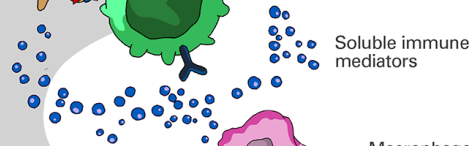


5. Memory is established through **memory T cells**.

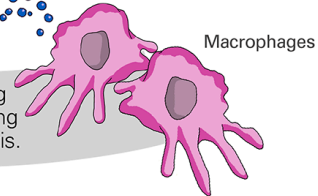


2nd allergen exposure

6. Upon re-exposure to the specific allergen, **T memory cells** now recognise the intruder.



7. T memory cells attract **macrophages** by secreting mediators, thereby triggering an allergic contact dermatitis.



Clinical examination – Mechanism

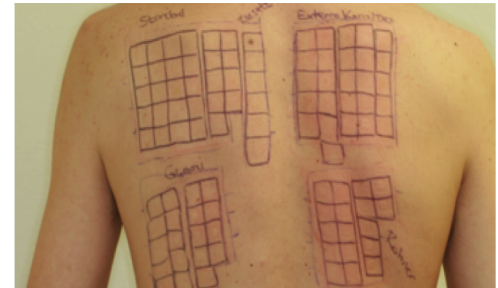
- Irritant contact dermatitis: mediated by innate immune system
- Allergic contact dermatitis: T cell-mediated inflammation
- Atopic dermatitis: both IgE antibody and T cell-mediated

Diagnosis – Patch test

- Major diagnostic tool in the identification of contact allergens
- Suspected allergens are applied on the intact skin
- After 2 days, the reaction is read a first time
- After another 2 to 5 days, a second reading is done

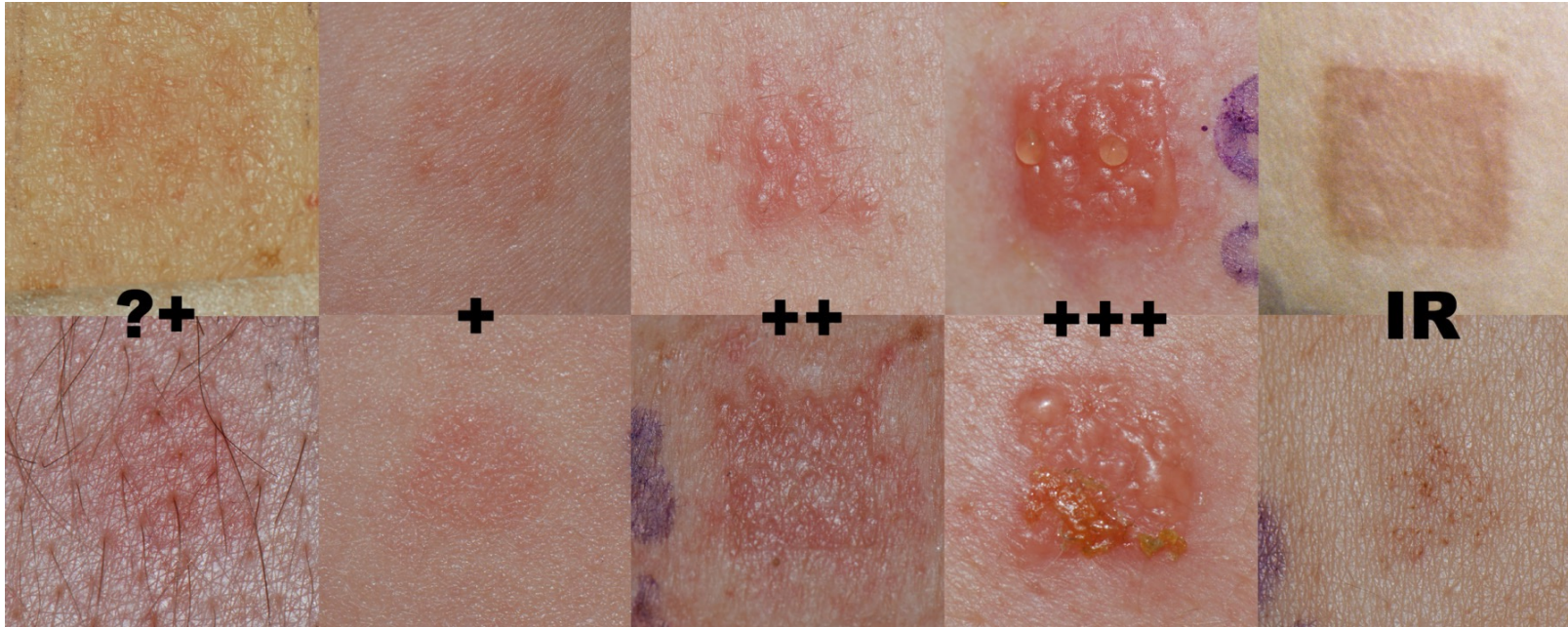


Application of allergens



Removal after 2 days

Diagnosis – Patch test



Source: Radoslaw Spiewak, The Open Allergy Journal, 2008, 1, 42-51 © Radoslaw Spiewak; used with permission

Diagnosis – Patch test

Notation Description Interpretation

Neg	Negative, no skin changes in the tested area
?+	Faint, non-palpable erythema, possibly few papules
+(1+)	Palpable erythema, moderate edema or infiltrate, possibly few papules, no vesicles / weak reaction
++(2+)	Strong infiltrate, numerous papules, possibly few vesicles present / strong reaction
+++ (3+)	Coalescing vesicles, bullae or ulceration / extreme reaction
IR	Inflammation sharply limited to the exposed area, lack of infiltrate, small petechiae, pustules, and efflorescences other than papules and vesicles

Diagnosis – Patch test



**+ Reaction
(Erythema)**



**++ and +++ Reactions
(Papules, Vesicles)**



**+++ Reaction
(Blister)**