

## DIAGNOSING ALLERGIES – PROCEDURES

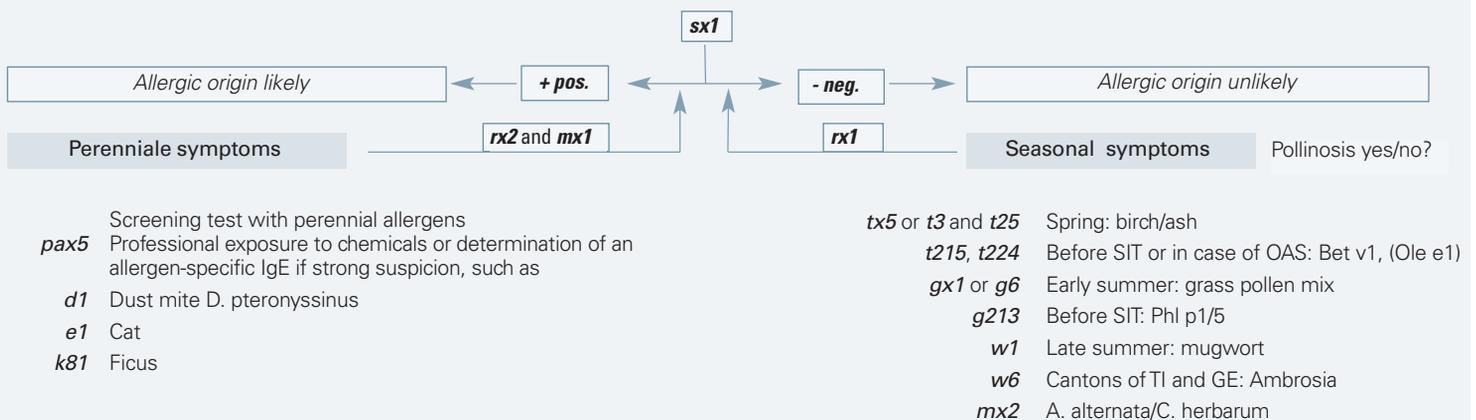
1. Patient's medical history (anamnesis)
2. Skin allergy tests (skin prick-testing) and/or identification of an allergen-specific IgE
3. Provocation tests as needed (ideally with placebo control, double blind; allergen administration by nasal, conjunctival or oral route, depending on symptomatology)

## AIRWAY ALLERGIES – DIAGNOSTIC ALGORITHM

Decisional flowchart shows the step-by-step diagnostic procedure recommended for allergic airway diseases diagnostic work-up and key differential diagnoses (adapted from Schmid P, 2008, Allergische Reaktionen der oberen und unteren Atemwege. Therapeutische Umschau; 65(3)):

### Allergic rhinoconjunctivitis or asthma?

Skin prick-testing or screening test



Differential diagnoses	Leading symptoms (as applicable)	Appropriate measures
ASA-induced asthma	Symptoms when taking ASA, nasal polyposis	Skin tests, provocation tests
ACE-inhibitor treatment	Cough, angioedema	Anamnesis
Exogenous allergic alveolitis	Flu symptoms, fever	Chest X-ray, BAL (possibly precipitins)
Allergic bronchopulmonary aspergillosis	Asthma, eosinophilia	Chest X-ray, total IgE increased Spec. IgE A. fum ( <i>m3</i> ), Asp f6 ( <i>m222</i> )
Churg-Strauss syndrome	Eosinophilia, systemic vasculitis	ANCA (c-ANCA)
Parasitosis (e.g. strongyloidosis)	Holiday anamnesis, cutaneous symptoms, pruritus, eosinophilia	Serologic parasite screening
Angioedema (hereditary)	Edema, usually without cutaneous changes (corticoid-resistant), dyspnea, abdominal pain	Coprology, total IgE, anti-C1q and complement C4 levels

## ABBREVIATIONS

Letters in italic or bold fonts, such as *i1*, match with the internationally accepted abbreviations for allergens or groups of allergens. They also serve as a reference for characterizing an allergen-specific IgE; thus, the birch-pollen specific allergen is named *t3*, the one against bee venom *i1* and the one against dust mite (*D. pteronyssinus*) *d1*.

<b><i>sx1</i></b> General screening for inhalant allergens: birch, mugwort, timothy, rye, Cladosporium, house dust mite, cat and dog dander	<b>Asp f</b> Aspergillus fumigatus (mushroom-like growths)
<b><i>rx1</i></b> Screening for seasonal inhalant allergens: birch, mugwort, wall pellitory, timothy, ribwort plantain	<b>Bet v</b> Betula verrucosa (beech-like growths)
<b><i>rx2</i></b> Screening for perennial allergens: dust mite, dog, cat, horse, Alternaria alternata	<b>Ole e</b> Olea europeae (Olea-like growths)
<b><i>mx1</i></b> Screening for moulds 1: Alternaria alternata, Aspergillus fumigatus, Cladosporium, Penicillium	<b>Phl p</b> Phleum pratense (grass-like growths)
<b><i>mx2</i></b> Screening for moulds 2: Alternaria alternata, Aspergillus fumigatus, Candida, Cladosporium, Penicillium, Setomelanomma	<b>ANCA</b> Anti-neutrophil cytoplasmic antibodies
	<b>ASA</b> Acetyl-salicylic acid
	<b>BAL</b> Bronchial and alveolar wash
	<b>OAS</b> Oral allergic syndrome
	<b>SIT</b> Specific immunotherapy

## REMARKS

The proposed algorithm and overviews are meant as a guide for the practicing family physician. They rely upon official guidelines, while not replacing these, and upon the recommendations from Prof. Dr. med. Peter Schmid-Grendelmeier, Allergy Station, University Hospital of Zurich.

The «yes-no» decision steps should be understood as a general statement and serve as a starting point for tailored individual patient care.

Fundamentally, the complete procedure builds on a detailed anamnesis, including of symptoms and on clinical examination.

## FOOD ALLERGIES / FOOD INTOLERANCE REACTIONS – DIAGNOSTIC PROCEDURES

### An allergic IgE-mediated origin is likely in case of

- Known respiratory allergy or atopy
- Symptoms suggesting an allergy (such as oral pruritus) when consuming the suspected food or general allergy symptoms (hives, asthma, shock)\*
- Symptoms temporally closely related with food intake (a few minutes to a few hours)

\*A specialized consultation is always recommended.

### Appropriate additional examinations

- |            |   |
|------------|---|
| <b>sx1</b> | General screening for inhalant allergens  |
| <b>fx5</b> | General screening for food allergens: specific IgE against cow milk, chicken eggs, wheat, peanuts, soya beans, fish (cod) |

### Typical cross-reactions (optional, non-mandatory)

- |           |   |                                   |
|-----------|---|-----------------------------------|
| Birch     | – | stone and pome fruit, celery      |
| Mugwort   | – | spices, celery                    |
| Dust mite | – | seafood                           |
| Latex     | – | exotic fruit                      |
| Peanuts   | – | Soya, sometimes also birch pollen |

- |           |   |
|-----------|---|
| Birch     | <b>t3</b> , Bet v1 <b>t215</b>                          |
| Mugwort   | <b>w1</b>   |
| Dust mite | <b>d1</b> , prawns <b>f24</b> , tropomyosin <b>f351</b> |
| Latex     | <b>k82</b>  |
| Peanut    | <b>f13</b> , soya beans <b>f14</b> , gly m4 <b>f353</b> |

Differential diagnoses	Leading symptoms (as applicable)	Appropriate measures
Lactose intolerance	Complaints after milk intake (e.g. flatulence, digestive disorders)	Symptomatology improvement after switch to lactose-free dairy products; lactose loading test, genetic test (LCTT-13910 C)
Fructose intolerance	True fructose intolerance is rare and if present usually severe since childhood More frequently: fructose malabsorption related to an exaggerated intake of fruit juice and sorbitol-sweetened soft drinks	Improvement after reduction of intake of food and drinks containing fructose or sorbitol
Histamine intolerance	Digestive disorders and other symptoms following the intake of histamine rich food and drinks (no anaphylaxis)	Improvement after reduction intake of histamine-containing food Test of dermatographism/serum tryptase Possibly additional exams for excluding mastocytosis Diamine-oxygenase trial
Food additives intolerance (e.g. sulfites E220-224)	Hives, asthma following the intake of sulfite-containing beverages	Skin tests (generally negative) Provocation test by an allergist

## INSECT VENOM ALLERGIES (primarily HYMENOPTERA VENOM ALLERGY) – APPROPRIATE MEASURES

According to the clinical reaction	Appropriate tests	Measures
<b>Grade 0</b> Exaggerated local reaction (edema surface > patient's palm surface or encompassing two joints or more)	IgE bee <b>i1</b> IgE wasp <b>i3</b> (3 weeks after the latest event)	If proven sensitization, equip with emergency kit: 2 tab of prednisone (glucocorticoid) 2 tab of antihistamine (anti-H1) incl. instructions for use
<b>Grade I</b> Hives		
<b>Grade II</b> Angioedema, diarrhea, nausea, vomiting		
<b>Grade III</b> Dyspnea, dysphagia, weakness, confusion	In addition to tests above:	In addition to measures above: epinephrine/ adrenaline auto-injector (e.g. Epipen®, Jext®)
<b>Grade IV</b> Fall in blood pressure, collapse, loss of urine, loss of consciousness	serum tryptase	
<b>Grade III-IV mid-term measures:</b> allergy status for evaluating the appropriateness of SIT with bee or wasp venom, which is generally indicated in these cases.		

### «CAVEATS/RED FLAGS»

#### Airway allergies:

- Systemic glucocorticoids should only be used in case of severe symptoms, during a few days.
- A SIT is appropriate in cases with rhinoconjunctivitis/mild asthma during successive years. Precautions required if severe allergic asthma.

#### Food allergies:

- False-positive tests related to the non-specific histamine release when performing skin prick-tests with native food products.
- Diagnostic tests for wheat flour – the test may be positive based on a cross-reaction in patients sensitized to rye or grasses. Cross-reactions are often of no clinical relevance as the wheat flour allergen is denatured by digestion (which is not the case when flour is inhaled!). A patient with a flour allergy may generally eat wheat bread without problems.
- Potentially amplifying co-factors exist such as physical exercise, alcohol intake, NSAID intake, febrile infections.
- Specific allergenic immunotherapy offers little chances of success. New therapeutic agents (recombinant allergens, biologicals) are currently under clinical evaluation.

#### Insect venom allergies:

- Repeated stings: the patient's reaction to a new sting may be similar to that to the previous sting, more severe or absent.
- Be particularly cautious in cases of co-medication with an ACE-inhibitor or a beta-blocker or in the presence of comorbidities (cardiovascular or respiratory).
- SIT must generally be continued during 5 years, after an ultrarush treatment initiation performed in an allergology center.

This notice is intended for physicians and does not relieve from diligent duty of care.