Allergen-specific immunotherapy

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Essentials

- Allergen-specific immunotherapy can be carried out either by giving subcutaneous injections or by sublingual immunotherapy from 3–5 years of age onwards, if the patient has an IgE-mediated allergic disease that impairs his/her quality of life.
- It is recommended to start allergen-specific immunotherapy at an early stage of an IgE-mediated allergic disease.
- The physician and the nurse should actively discuss with the patient about allergen-specific immunotherapy, since a large share of patients receiving such therapy have taken the issue up themselves.
- The most common allergens used in the therapy include birch, timothy grass, wasp and bee. More rarely used allergens include cat, dog and horse.
- For sublingual immunotherapy, timothy grass and birch are the first more widely available allergens.
- The effect of allergen-specific immunotherapy is good in allergic rhinitis and in allergy to Hymenoptera venoms both in adults and in children.
- Allergen-specific immunotherapy is also used in allergic asthma as a part of anti-inflammatory treatment with good effect both in adults and in children.

General

- Allergen-specific immunotherapy is the causal treatment of IgE-mediated
  - allergic rhinitis and conjunctivitis
  - allergic asthma and
  - allergy to wasp and bee venoms (i.e. *Hymenoptera*).
- During allergen-specific immunotherapy the allergic inflammatory reaction diminishes.
- In allergy to *Hymenoptera* venoms, allergen-specific immunotherapy suppresses any life-threatening reactions in 80% of patients and alleviates the severity of reactions in the rest 20%.
- The treatment is usually continued for 3 years, in *Hymenoptera* allergy for 5 years.
- The treatment has an effect in 80–90% of the patients. The effect lasts several years after the treatment has been stopped; in children with grass allergy it has been shown to last for 12 years.
- The treatment is started by a physician with expertise in the investigation and treatment of allergic diseases.
- Sublingual immunotherapy may be started even in primary care, in student health care services or in occupational healht care, provided that the physician has adequate expertise.

Preconditions

- General preconditions to be met before starting allergen-specific immunotherapy
  - The patient has confirmed IgE-mediated allergy (allergic rhinoconjuctivitis) that causes symptoms.
  - There are no contraindications to the treatment.
  - The patient wishes to have the treatment.
  - Trained personnel are available to give and follow up the treatment according to current clinical guidelines.
- The treatment can already be started at an early stage of the disease.
  - The risk of children allergic to pollen of birch or timothy grass to develop asthma may diminish when allergen-specific immunotherapy is started sufficiently early.
- Good patient guidance includes all information about the duration and cost of the treatment as well as about the restrictions and possible adverse effects caused by it. This improves compliance.

Indications

- The effect is good in pollen A, animal and house dust mite allergies. In allergy to Hymenoptera venoms allergen-specific immunotherapy is the only effective causative treatment. Asthma in itself is hardly ever treated solely with allergen-specific immunotherapy.
- Allergy to Hymenoptera venoms
- Allergic rhinoconjuctivitis A caused by
  - pollens
  - house dust mite
  - animals/pets when it is in practice impossible to avoid contact with the animal in everyday life (e.g. a visually impaired person sensitized to the guide dog, a child strongly allergic to a pet cat, a customs officer allergic to a sniffer dog)
- Asthma A caused by
  - pollens
  - house dust mite
  - animals/pets
- Allergy to moulds (not indicated for symptoms associated with water-damaged houses as these are usually irritation symptoms).
- Occupational allergies
  - animals

Contraindications

- Other immunological or malignant disease
- Severe heart and respiratory illnesses
- Continuous oral glucocorticoid medication (over 10 mg of prednisolone or corresponding other steroid per day)
- Beta-blocker medication (also as eye drops because in a severe reaction the effect of adrenaline is reduced)
- Age under 5 years; 2 years of age is an absolute contraindication, 3–4 years of age is a relative contraindication.
- Pregnancy and breastfeeding

Practical aspects

- The treatment is administered around the year by giving subcutaneous injections of aluminium hydroxide-bound depot allergen extracts.
- During the updosing phase, which lasts 7 or 15 weeks, the injection dose is increased every 1–2 weeks. After the updosing phase the treatment can be given in a health care centre in cooperation with the centre where it was first started in accordance with the local practices and agreements.
- In the maintenance phase the injections are usually given every 6 (4–8) weeks.
- The maintenance dose is individual (the largest dose the patient can tolerate), but no more than recommended by the manufacturer of the allergen extract (the side-effects increase, but the effect does not).
- The next dosage is dictated by the possible reaction from the previous injection and the symptoms the patient has at that time.
- During the pollen season the dose of allergen extract depends on the patient's symptoms. Detailed directions can be obtained from the manufacturers of the allergen extracts.
- The treatment duration is 3 years for inhaled allergens and 5 years for hymenoptera venoms.

Precautions

- A qualified nurse should give the injections and a physician should always be present at the centre.
- The patient is interviewed about possible reactions after the previous visit before giving the injection.
- The patient should be followed up for at least 30 minutes supervision after the injection.
- Patients below 15 years of age must be accompanied.
- Intensive physical exercise and alcohol must be avoided after the injection.

Treatment-related reactions

- Various injection reactions are a natural part of the treatment: local redness and swelling.
- The dosage of the extract is estimated every time on the basis of the swelling reaction (a lump which can be felt and measured with the finger, not a possible prick lump on the skin!).
- Generalized reactions (urticaria, asthma, fatigue, generalized allergic reaction) might occur.
- The patient is given medication for the reactions:
  - antihistamine
  - glucocorticoid cream
  - a bronchodilator
  - possibly self-injected adrenaline (training equipment should be used to initially teach the patient and to regularly check the patient's skills in proper use of the injector!).

Sublingual immunotherapy evd

- Sublingual immunotherapy is effective and safe for allergic rhinitis and asthma caused by grass pollen or birch in children from 5 years of age onwards and in adults C.
- The indications and contraindications for sublingual immunotherapy are the same as for subcutaneous allergy vaccines.
- The patient visits yearly the centre where the therapy was started for follow-up.
- Sublingual immunotherapy for grass with timothy grass extract
  - The first quickly dissolving sublingual tablet is administered at the centre providing the therapy when the physician is present. Many patients (about 50%, both children and adults) feel itching on the oral mucosal membranes but this subsides in a few minutes and does not recur when the treatment has lasted for about one week.
  - The therapy is carried out at home by taking one tablet per day for a period of 3 years.
- Sublingual immunotherapy for birch with birch-pollen sublingual solution
  - The first dose of the sublingual solution (one puff from the 10 IR/ml bottle) is administered at the centre providing the therapy.
  - The dose is gradually increased up to the maintenance dose according to a separate dosage instruction. The recommended maintenance dose is 8 puffs from the 300 IR/ml bottle daily.
  - It is recommended to use one starter set and 5 maintenance sets during the treatment season.
  - The birch solution is administered daily starting in the beginning of January until the beginning of June in 3 consecutive years. Check also the local recommendations regarding the yearly treatment period.

Follow-up

- The doctor who first started the treatment should evaluate the efficacy annually.
- This evaluation is based on the allergic symptoms and the use of other medication.
- So-called VAS evaluation (visual analogue scale) is a method for evaluating efficacy. The patient gives his estimate of the effect yearly by using the VAS. The evaluation is based on changes in symptoms and use of medication during the treatment.

Related resources

- Cochrane reviews 1
- Literature 1

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