Immunotherapy

History:

the final medical modality used in the treatment of allergic rhinitis immunotherapy bagan at the dawn of the twentieth century1900 Curtis tried to immunize people with aqueous extracts of whole weeds-anaphylatic episode 1907 Besredka and steinhardt reported that anaphylaxis was not that immunotherapy was inheretly dangerous, but rather that immunizing too rapidly or with too large a dose of allergen was what triggering anaphylatic reactions.

-quantitization.1914 Freeman and Koessler demonstrate that immuunotherapy with allergen extracts produced longlasting results.

Mechanisms of action:

there is no single answer to this question.

- gradual increase in allergen-specific IgG antibodies- blocking antibodies-IgG1 and IgG4
- the decrease during prolonged immunotherapy in levels of allergen specific IgE antibodies, reduction in IgE may be caused by reduced antibody synthesis, which in turn is caused by decreased B lymphocyte antigen-induced blastogenesis
- rise in both IgA and IgM antigen specific B lymphocytes are seen during immunotherapy-reduced antigen penetration
- Immunotherapy alters the relative activity of T-lymphocyte helper and suppressor cells, because the production of cytokine products by these cells is altered by immunotherapy
- immunotherapy improved T-cell activation by the CD2-mediated pathway.
- prevent the rise in chemotactic factors that normally occurs during an allergy season.
- serve as a corticosteroid-sparing treatment

Clinical application

- unequivocal proof of the benefits of immunotherapy in the rhinitis, asthma and insect-sting allergy
- it can be used as the sole treatment or in combination with any medication or enviromental control measures
- easier than adhering to a daily regimen of tablets and inhalers.
- moderate in cost

Indications

1. treating patients on the basis of positive allergy tests, and relevant clinical symptoms
2. clearly allergic symptoms, don*t use in trivial, equivocal or evanescent symptoms
3. tried when attemp to avoid allergens fail or are impratical
4. when treating with medications is not fully successful or when medications are not well tolerated, have significant toxicity, or are not used regularly.

Contraindication

1. absulute contraindication is failure to prove that allergy exists
2. relative contraindication: symptom severity and the success of alternate therapies.
   4 technical relative contraindication:
   * concomitant use of b-blocker drugs.
   * pregnancy
   * there is established immune dysregulation, such as in autoimmune disease
   * infection with HIV, this will acclerate progression of the disease
3. compliance and motivation of patient
4. ideal patients for immunotherapy are symptomatic but do not have life-threatenting allergies. The risk of anaphylaxis may be greater in persons with asthma, especially those who are highly sensitive or who have a history of many emergency department visits, caution is needed

Allergy testing

the evaluation, selection of appropriate tests, testing,test interpretation, and initiation as treatment follow in smooth succession.most allergists test for only the predominant inhalants that are present in their region selection of the appropriate type of test, 4 test options

1. combined prick and intradermal skin tests
2. skin end-point titration
3. radioallergosorbent test
4. many varients of enzyme-linked immunosorbent assays physician preference, patient acceptance, and relative cost

Treatment and follow-up

vial test within 3 to 6 months, most patients should show noticeable benefits of their immunotherapy continuation between 3 to 5 years is desirable

Future aspects

including the use of chemically modified allergens, nonparenteral allergen exposure, sustained-released allergen delivery, anti-immunoglobulin E antibodies,g-globulin,immune complexes, cytokines, and T-cell-tolerogenic peptides

improved methods of immunotherapy

- the development of standardized allergenic extracts
- use of oral administration of allergens, intranasal or pulmonary inhalation of allergens
- the potential use of modified allergens which may be longer lasting or less hazardous than conventionalglycerin extracts-allergens chemically bound to small-molecular-weight monomethoxypolyethylene glycol polymers
- use of slow-release vehicles for immunotherapy injections or for digestion protection with oral treatment-microspheres made from copolymers of glycolic acid and lactic acid andstabilized phospholipid liposomes

New immunomodulatory techniques

- eliminate both circulating IgE molecules and the release of histamine from mast cells and basophils by using of a vaccine that raised anti-IgE antibodies directed against the constant region of IgE.
- the injection of allergen-IgG-immune complexes-high cost and the potential for exposure to infectious diseases

T-cell tolerogenesis

induce tolerance by directly affecting the balance between T helper and supressor cells