Allergic rhinitis

Allergic rhinitis involves inflammation of nasal mucous membranes in sensitized individuals when inhaled allergenic particles contact mucous membranes and elicit a response mediated by immunoglobulin E (IgE) or other inflammatory mediators, such as histamine, leukotrienes, prostaglandin, tryptase, and kinins.

Mast cells interacts with airborne allergens, triggering release of inflammatory mediators. These mediators cause vasodilation, increased vascular permeability, and production of nasal secretions. Histamine produces rhinorrhea, itching, sneezing, and nasal obstruction. The inflammatory response causes persistent chronic symptoms, including nasal congestion.

There are two types:

- **Seasonal** allergic rhinitis (or *hay fever*). It occurs in response to specific allergens (pollen from trees, grasses, and weeds) present at predictable times of the year.
- **Persistent** (or *perennial*) allergic rhinitis. It occurs year-round in response to nonseasonal allergens (e.g., dust mites, animal dander, and molds).

Clinical presentation

- Symptoms include clear rhinorrhea, sneezing, nasal congestion, postnasal drip, allergic conjunctivitis, and pruritic eyes, ears, or nose.
- In children, physical examination may reveal dark circles under the eyes (allergic shiners), a transverse nasal crease caused by repeated rubbing of the nose, adenoidal breathing, edematous nasal turbinates (*conchae*) coated with clear secretions, tearing, and periorbital swelling.
- Patients may complain of loss of smell or taste, with sinusitis or polyps. Postnasal drip with cough or hoarseness can be bothersome.
- Untreated rhinitis symptoms may lead to insomnia, malaise, fatigue, and poor work or school performance.
- 10-40% of allergic rhinitis patients have asthma.
- Complications include recurrent and chronic sinusitis and epistaxis.

Treatment

Nonpharmacologic therapy

- Avoiding offending allergens
- Patients sensitive to animals benefit most by removing pets from the home.
- Reducing exposure to dust mites.
- Patients with seasonal allergic rhinitis should keep windows closed and minimize time spent outdoors during pollen seasons. Filter masks can be useful.

Pharmacologic therapy

➢ **Antihistamines**

Histamine H1-receptor antagonists are effective in preventing the histamine response but not in reversing its effects after they have occurred.

Oral antihistamines are divided into two main categories:

- first-generation or sedating antihistamines
  - Ex: Cyproheptadine, chlorpheniramine, diphenhydramine, clemastine and dexchlorpheniramine
- second-generation or non-sedating antihistamines
  - Ex: Cetirizine, levocetirizine, loratadine, desloratadine, fexofenadine

- *Azelastine* is an ***intranasal antihistamine***. relieves symptoms of seasonal allergic rhinitis. *Olopatadine* is a second-generation antihistamine. It can be used as ***ophthalmic eye drops*** for conjunctivitis associated with allergic rhinitis. Also, it is available in intranasal dosage form as an alternative to azelastine and may cause less drowsiness.
- Symptom relief is caused in part by an anticholinergic drying effect that reduces nasal, salivary and lacrimal gland hypersecretion. Antihistamines antagonize increased capillary permeability, wheal-and-flare formation, and itching.

➢ **Decongestants**

Topical and systemic decongestants are sympathomimetic agents that act on adrenergic receptors in nasal mucosa to produce vasoconstriction, shrink swollen mucosa, and improve ventilation. Decongestants work well in combination with antihistamines.

Rhinitis medicamentosa (rebound vasodilation with congestion) may occur with prolonged use of topical agents. So, these products should be used only when absolutely necessary (e.g., at bedtime) and in doses that are as small and infrequent as possible. Duration of therapy should be limited to 3 to 5 days.

Topical and systemic decongestants include:

- Pseudoephedrine, phenylephrine and phenylpropanolamine
- Xylometazoline, Naphazoline and Oxymetazoline (topical only)

- **Nasal Corticosteroids**

Intranasal corticosteroids relieve sneezing, rhinorrhea, pruritus, and nasal congestion with minimal side effects. These agents are an excellent choice for persistent rhinitis and can be useful in seasonal rhinitis. Treatment should begin 2–3 weeks before the start of the hay fever season.

E.g.: Beclomethasone, budesonide, fluticasone, mometasone and triamcinolone.

Intranasal corticosteroids are also available in combinations with antihistamines.

- **Cromolyn Sodium**

Cromolyn sodium, a mast cell stabilizer, is available as a nonprescription nasal spray for symptomatic prevention and treatment of allergic rhinitis.
For seasonal rhinitis, treatment should be initiated just before the start of the offending allergen's season and continue throughout the season. In persistent rhinitis, effects may not be seen for 2 to 4 weeks.

- **Ipratropium Bromide**

Ipratropium bromide nasal spray is an anticholinergic agent useful in persistent allergic rhinitis. It exhibits antisecretory properties when applied locally and provides symptomatic relief of rhinorrhea.

- **Montelukast**

Montelukast is approved for treatment of persistent allergic rhinitis in children as young as 6 months and for seasonal allergic rhinitis in children as young as 2 years. It is effective alone or in combination with an antihistamine.
Montelukast is no more effective than antihistamines and less effective than intranasal corticosteroids.

Referral points:

Signs and symptoms	***Causes***
Wheezing and shortness of breath	suspected asthmatic attack
Tightness of chest	suspected asthmatic attack
Painful ear	suspected otitis media
Painful sinuses	suspected rhinosinusitis
Purulent conjunctivitis	Occasionally, this allergic conjunctivitis is complicated by a secondary infection.
Failed medication	no improvement within 5 days – some references 7 days

Atopy

Atopy is an exaggerated IgE-mediated immune response. The ***atopic triad*** or ***atopy triad*** is a set of comorbid conditions – atopic dermatitis (eczema), asthma, and allergic rhinitis.
Atopy refers to the genetic tendency to develop allergic diseases such as allergic rhinitis, asthma and atopic dermatitis (eczema). Atopy is typically associated with heightened immune responses to common allergens, especially inhaled allergens and food allergens.

Atopic March, sometime called ***Allergic March***, refers to the natural history or typical progression of allergic diseases that often begin early in life. These include atopic dermatitis, food allergy, allergic rhinitis and asthma.

This means ***atopic march*** is ***Atopy*** + ***food allergy***