

EAR, NOSE AND THROAT

(12) Nose II

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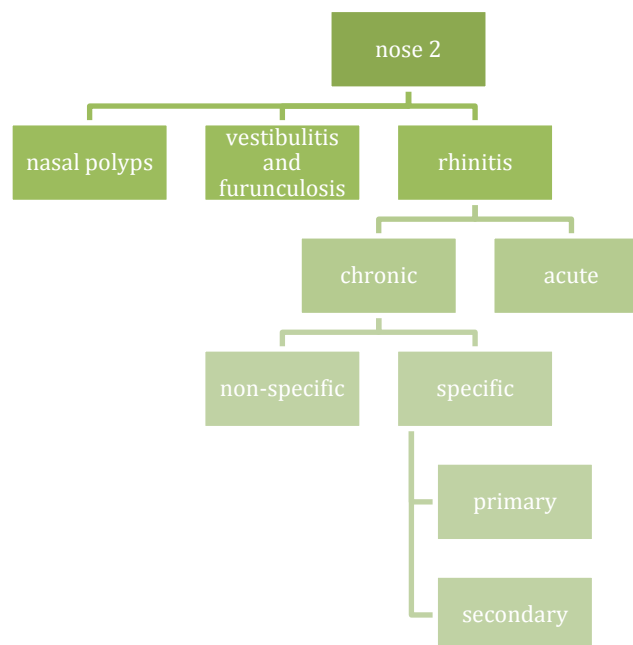
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Objectives:

- *Acute rhinitis (etiology, clinical, treatment, complications)
- *Chronic rhinitis (classification)
- *Allergic rhinitis (pathology, clinical and management)
- *Non-allergic rhinitis
- *Atrophic rhinitis (definition, pathology, clinical and brief treatment)
- *Nasal polyps (types, causes, pathology and treatment)

The doctor didn't provide us with the slides.
But we tried to write everything + Toronto notes + we took parts from the 430 teamwork according to the objectives



Rhinitis:

Acute rhinitis: (common cold & influenza & Para influenza)

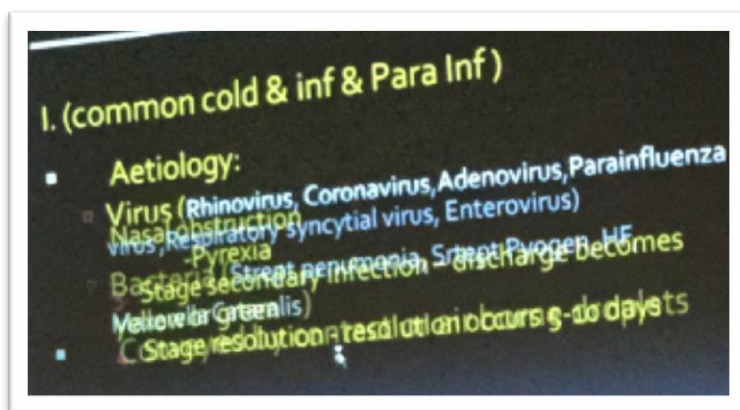
***Etiology:**

-Virus: (rhinovirus, coronavirus, adenovirus, Para influenza virus, respiratory syncytial virus, enterovirus)

-Nasal obstruction:

-Pyrexia

-Bacterial: strepto pneumonia, strepto pyogen



***Clinical stages:**

1. Dry prodromal stage (few hours)
2. The Catarrhal stage (few days)
3. Mucous stage (3-5 days)
4. Resolution stage (5 days- 1 week)
5. Secondary bacterial infection

| prodromal stage | Catarrhal stage | Mucous stage | Resolution stage | Secondary bacterial infection |
|---|---|--|---|---|
| <p>Generalized Symptoms:</p> <ul style="list-style-type: none"> •Chills, cold &heat . •Headache, fatigue. •Loss of Appetite . •Subfebrile temperature. •(Itching, burning, dryness, irritation) of the nose and throat. | <ul style="list-style-type: none"> •Watery profuse Secretions. •Nasal Obstruction. •Loss of smell. •Lacrimation . •Rhinolalia clausa (hyponasality of the voice). •Constitutional symptoms worsen. | <ul style="list-style-type: none"> •All generalized symptoms become improved. •Thick secretions. •Local symptoms regress. | <ul style="list-style-type: none"> •usually in one week. | <ul style="list-style-type: none"> •Greenish yellow secretions. •Resolve slowly. |
| <p>Examination:</p> <ul style="list-style-type: none"> •Nothing but mucosa pale & dry | <p>Examination:</p> <ul style="list-style-type: none"> •The mucosa deep red +swollen around the turbinate . •Secret profusely . | | | <p>Most common organism:</p> <ul style="list-style-type: none"> •Haemophilus Infl. •Streptococc Pneumoniae. |
| <p>⚡ If the initial stage was catarrhal:</p> <ul style="list-style-type: none"> •It will be due to: Influenza, Parainfluenza , adenovirus ,Rheovirus, Coronavirus , Enterovirus, myxovirus& Respiratory syncytial virus. •Symptoms will be as before in addition to: Entire respiratory tract, G.I.T,Meninges,Pericardium , Kidneys & Muscles. | | | | |

***Prophylactic:** avoid contact with patient

***Therapeutic:**

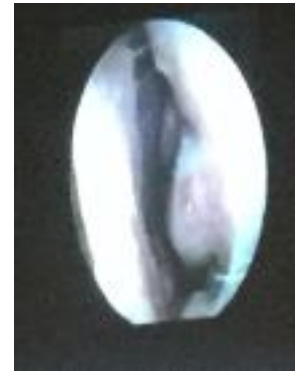
- Rest
- Analgesics
- Decongestant
- Antibiotic

- We might have pus in severe viral infection, it's dead WBC, but antibiotic is rarely given for viral infection.
- acute rhinitis is < 3 weeks , chronic is >3 months



Chronic rhinitis: Specific:

- Syphilis
- Wegner's granuloma
- Medline lethal granuloma
- Sarcoidosis
- Mycobacteria (TB rare)
- Atrophic rhinitis



Non-specific: Atrophic rhinitis

***Definition:** chronic inflammation of the nasal mucosa with atrophy of various nasal constituents

***Etiology:**

- Not fully known
- Infection
- Endocrine or vitamin disturbance

***Types:**

- Primary (without any interference)
- Secondary (usually related to surgery)

Primary atrophic rhinitis:

*Clinical feature:

- Foul stench (very bad smell but patient may not notice due to adaption of smelling sensation)
- Epistaxis (due to atrophy and crusting)
- Sensation of obstruction (big nasal cavity without turbulence = feeling of obstruction called roomy nasal syndrome or empty nasal syndrome)

*Pathology:

- 1-degeneration of epithelium glands
- Thick crust in the nose-infected
- Foul smelling
- 2-atrophy of the bony turbinates

*Treatment:

- Removal of the crust
- Glucose 25% in glycerin drops to lubricate the nose
- Local or systemic antibiotic if bacterial infection
- Surgical measures if sever and lead to obstruction

Secondary atrophic rhinitis:

Secondary to sever deviated septum, syphilis, lupus, excessive operation (turbineotomy, which is less common nowadays)

Main goal of medical treatment: restoration of nasal hydration and minimize crusting

Anti-evaporation compounds (not given in a big quantity to avoid going to the lung and cause pneumonitis or it may emboli)

- Glycerin
- Mineral oil
- Methanol mixed with paraffin
- Odor masking agents, such as rose oil or methanol

Systemic or oral therapies:

- Aminoglycoside for *Pseudomonas*, a strictly aerobic, gram-negative rod of relatively low virulence
- Tetracycline
- fluoroquinolones

Traid of atrophic rhinitis:

- Fetor (bad smell)
- Crusting
- Atrophy of the nasal structures involving the bone as well, mucosa will be fragile and thinner
- *If you have this traid, you must take swab and send for culture

Surgical therapies:

- Degenerative operations
- Volume reduction operations
- Nasal closure operations (close then open)

Allergic rhinitis:

All the rest of other types of **RHINITIS** are from 430

- All rhinitis has allergic factors except 20-30% are not and called non-allergic rhinitis or vasomotor rhinitis.
- Due to inhalation of the allergen.
- The disease is hereditary AR Antigens are usually wind-borne [e.g.; grass & tree pollens], HDM (house dust mite), fungi, dog & cat dander
- Types: Seasonal, Perennial, and Occupational.

A- Seasonal Allergic rhinitis:

Start at Early Spring by [tree pollen] then in Midsummer by [grass pollen] and end in autumn by [molds]

B- Perennial Allergic rhinitis:

Causes:

- The house dust mite is the most common cause.
- A mountain hut in Sweden. (Go there to escape AR!)
- Fungi, animal hair, house dust & mites.
- Houseplants: [primulas & rose].
- Food: [fish, strawberries, nuts, eggs, milk, & flour].

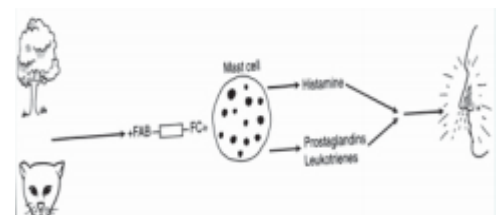
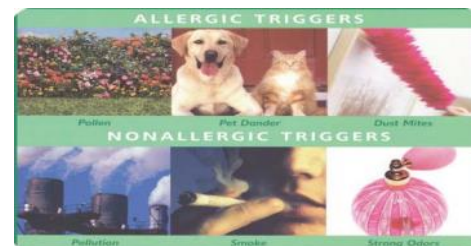
c- Occupational allergies:

[Bakers, hairdressers & painters]
(e.g.; latex, powders, paint vapors)

*The Classic Reaction

- Type 1 IgE mediated reaction, produced in Plasma cells and regulated in T-Lymphocytes.
- IgE has a crystallized fraction that bind to MC (mast cell) then release protein (Fab).
- Fab + Antigen lead to triggering of mast cell degranulation and release of material like (Histamine, Leukotriene, Prostaglandin).
- These substances cause: Mucosal edema & nasal secretion.

- The classification "seasonal" and "perennial" allergic rhinitis has been changed to "intermittent" and "persistent" allergic rhinitis
- Seasonal allergic rhinitis occurs only when pollens in the air (hay fever).
- Perennial rhinitis occurs all year round & can be a myriad of substances, although house dust mite is high on the list



***Note:**

- Nonorganic substances can induces inflammatory reaction and nonspecific irritants like: smoke and dust >> Vasoactive substances (the reaction is not IgE mediated but it's IgG).
- Physical factors can affect the mast cell like: Temperature change& alcohol.

***Diagnosis of AR:**

- Detailed medical history.
- ENT examination.
- Other tests as appropriate: allergy tests, endoscopy, nasal smear, nasal swab, radiology, nasal airway assessment, olfaction, and blood tests.

***AR Symptoms:**

- “SNEEZERS AND RUNNERS”: Itchy nose, sneezing, watery rhinorrhea, nasal congestion (variable), diurnal rhythm (worse during day), often associated conjunctivitis.
- “BLOCKERS”: Little or no sneezing, thick catarrh (with post nasal drip), no itch, and constant symptoms - possibly worse at night.

***Examination:**

- Allergic crease
- Nasal mucosa: livid & pale
- The turbinates: swollen
- Clear secretion: +++



***Investigation:**

- Skin prick testing
- RAST (radioallergosorbent test)
- Typical history
- Patch tests
- Nasal Cytology
- IgE
- Rhinomanometry
- Nasal provocation test
- Intracutaneous tests
- Mucociliary clearance
- Rhinoscopy tests
- P.N.S. CT

PNS CT = CT of the Para nasal sinuses

***DDX of AR:**

- Vasomotor rhinitis
- Common cold
- Cerebrospinal rhinorrhea
- Polyps.
- Granulomas e.g. Wegener’s Granulomatosis.
- Mechanical factors: deviated septum, hypertrophic turbinates, and foreign bodies.
- Coryza
- Tumors.

***Treatment:**

| Causal Treatment | Symptomatic Treatment (imp) |
|--|---|
| <ul style="list-style-type: none"> •Immunotherapy or Desensitization. •Allergen Avoidance. •Local or systemic inhibitions of H substance. | <ul style="list-style-type: none"> •Antihistamines. •Topical Steroids & Cromoglycate. •Systemic Steroids. •Nasal Decongestant. •Anticholinergic. •Antibiotics. (after culture & sensitivity) •Polypectomy & turbinoplasty. |

Rhinitis Sicca Anterior:

***Pathogenesis:**

Anterior part of the septum usually exposed to hot, dry weather. So trauma or dryness >> irritation to this part >> Crusts formation and attempt to remove it >> Nasal bleeding>> septal perforation.

***On examination:**

- Nasal septum is dry
- Mucosal surface is: Raw, roughened, & granular.
- Crustation >>ulceration>> Septal perforation

***Differential Diagnosis**

- Chemical injury (Chromium workers) •Iatrogenic septal perforation •Trauma
- Lupus •Leprosy •syphilis

***Treatment:**

- Nasal ointments
- Septal perforation closure

***Prognosis:**

- Good prognosis
- Regresses with time
- Some times →bronchial asthma

***Complications:**

- L.R.T.
- Nasal sinus
- Nasal or sinuses polyps

***Indications for surgery:**

- Anatomical abnormalities
- Excessive mucosal swelling
- Presence of irreversibly diseased tissue

***Surgical procedure:**

- Polyp removal
- Correction of septal deformities
- Turbinate surgery
- Sinus drainage
- Removal of adenoid

Pregnancy Rhinitis:

- Nasal swelling & obstruction
- Start at the 2nd half of pregnancy
- Resolve after delivery

Rhinitis Medicamentosa (imp):

Reversible or irreversible damaged mucosa caused by topically or systemically applied drugs:

- Hyperplastic Rhinitis
- Dryness of the nasal mucosa
- Toxic Rhinopathy (Vasoactive substances)

“Acute intoxication in infants & small children”

Atrophic Rhinitis & Ozena (imp):

Atrophic rhinitis + foul smell = Ozena

*Types:

- Primary: rare
- Secondary: common, and it's due to massive cutting of the turbinate in surgery, trauma or Occupational exposure to: Glass, wood, asbestos, etc.
 - Mainly in women, at puberty, Flattened nose & broad Face (due to fullness of crustation)

*Examination:

- Greenish-yellow or brownish-black crusts
- Wide nasal cavity
- Atrophic mucosa & dry: Sub epithelial layer fibrosis
- Fetid secretion & crusts (Ozena)
- Anosmia & social problem
- Nasal obstruction

*Pathogenesis

- Unknown cause but is multifactorial
- Common in Orientals than in whites than in blacks
- Respiratory epith. >> sq. metaplasia
- Destroyed mucociliary cleaning system
- Bacterial proteolysis decomposed the thick & gluey secretions

*Differential Diagnosis

- Atrophic rhinitis with fetor (ozena)
- Tumors of the Nose & Sinuses
- Purulent Rhinitis & Sinusitis
- Rhinolith & foreign body
- Gumma due to stage III Syphilis
- Nasal diphtheria & Nasal Tuberculosis
- Glanders

*Treatment:

| Conservative (better than surgery) | Operative |
|--|---|
| <ul style="list-style-type: none">• Nasal douching.• Alkaline nasal lotion.• Greasy ointments.• Oily nasal drops, emulsions, or ointments.• Steam inhalations.• Osmotic Powders : Dextrose. | <ul style="list-style-type: none">• Bolstering of the Nasal Mucosa (Cartilage or Bone chips).• Median Displacement of the lateral nasal wall by internal rotation of the mobilized lateral nasal wall. |

Nose II

ENT Teamwork 432

Vestibulitis and furunculosis:

nasal vestibulitis:



-Furunculosis: the same as vestibulitis, with pus
-Vestibulitis: more broad term than furunculosis, infection of skin and hair follicles
-Cellulites: skin infection without pus

Furunculosis of nasal vestibulitis

Acute staphylococcal infection of hair follicle

-Vestibule: is lined by squamous cell epithelium not respiratory epithelium, so it can be affected by skin diseases like dermatitis and furunculosis

-There will be pain, swelling, infection and sometimes fever

***Clinical features:**

Pain-tenderness-indurated swelling in the vestibule

***Treatment:**

Systemic antibiotics or topical depends if the patient is immune-compromised or extreme of age

Rx depend on immunity& symptoms &age (extreme age)

If mild symptoms might give topical, if sever might give systemic in top of topical)



***Complication:**


Because head and neck have a valve less venous system, so it can go ante grade or retrograde, so it may push infection

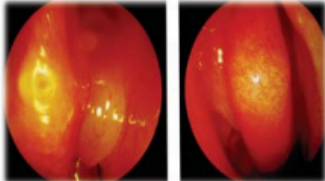
Cavernous sinus thrombosis (theoretical risk, called dangerous area), cellulitis of upper lip

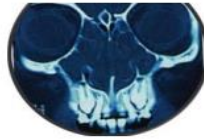
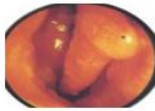
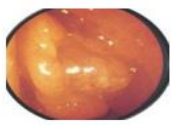
Nasal polyps:

From 430 teamwork

- Benign pedicle or sessile pale gray sacks of mucosa.
- Usually ethmoid sinus is affected.
- Etiology: infection, allergic, 90% eosinophil.
- Any age is possible but uncommon in children (exclude encephalocele).
- Male affected more than female but if the pt. is having asthma the ratio is equal.
- Mostly bilateral (if unilateral think of inverted papilloma, encephalocele or carcinoma).
- 100 to 1000 times histamine / serum (histamine is 100 times more than serum indicating mast cell degranulation in sinuses). "Causes of mast cell degranulation extreme temp. drugs, & complement factors."
- If the eosinophil >90% it suggests association with AR.
- 50% nasal polyps will develop asthma (proper treatment of the polyp will improve asthma).
- 80% have ASA or Sempter's triad (polyp, aspirin sensitivity and asthma).
- Nasal polyposis is chronic & recurrent disease.
- Patient have Miserable time and they respond well to Salicylate-free diet.

| Clinical Feature: | examination: | Investigation |
|--|---|--|
| <ul style="list-style-type: none"> • Nasal obstruction, decrease sense of smell, sneezing, rhinorrhea and Postnasal drip: clear, yellow or green (depend on degree of eosinophilia or infection). • Hyponasal voice [permanent cold]. • No pain unless secondary infection. • No bleeding no discharge but if there is bleeding or serosanguinous discharge think of carcinoma | <ul style="list-style-type: none"> • Bilateral pale, glistening gray sacks of polyp hanging from the sinuses. • Frog face (in a massive polyp)  • differentiate between polyp and turbinate by pushing it with a probe if it's movable and painless >> polyp if not >> turbinate | <ul style="list-style-type: none"> • CT scan (because FESS is usually indicated) • Skin tests [H. dust or pollen] • In Child do : • CT scanning to exclude (Encephalocele) • Sweat test to exclude (Cystic Fibrosis) |

| Medical treatment | Surgical Treatment |
|---|--|
| <p>Topical steroids : good in 50% First line of management 1- month course & review Head down position [drops] Aqueous spray :daily basis Patient must be aware of unwanted effects of steroid sprays</p> | <p>Nasal polypectomy(Partial or total ethmoidectomy) Postoperatively Topical steroids :- -Minimal time is 3 months</p> |
| <p>Systemic steroids :Short reducing dose (it may lead to Avascular necrosis of the head of femur)</p> |  |



Antrochoanal polyp:

- Long pedicle unilateral solitary benign polypoidal lesions
- Arises in the intramural maxillary sinus cysts in the post. Aspect of the sinus
- Unknown etiology
- Can recur after treatment.
- Dumbbell shape
- Unilateral nasal blockage

***Surgical treatment:**

- Endoscopic nasal removal (by FESS)
- Caldwell-Luc procedure
- Snare Simple polypectomy: 20% recurrence

***Ddx:**

Inf. Turbinate enlargement, polypoid rhinosinusitis, juvenile N angiofibroma, mucus R cyst, mucocele, benign or malignant nasopharyngeal tumors Preop. Components identification by its characteristic radiographic appearance

Summary I (from Toronto notes)

***Definition:** inflammation of the lining (mucosa) of the nasal cavity

Table 10. Classification of Rhinitis

| Inflammatory | Non-Inflammatory |
|---|--|
| <ul style="list-style-type: none"> • Perennial non-allergic <ul style="list-style-type: none"> • Asthma, ASA sensitivity • Allergic <ul style="list-style-type: none"> • Seasonal • Perennial • Atrophic <ul style="list-style-type: none"> • Primary: <i>Klebsiella ozena</i> (especially in elderly) • Acquired: post-surgery if too much mucosa or turbinate has been resected • Infectious <ul style="list-style-type: none"> • Viral: e.g. rhinovirus, influenza, parainfluenza, etc. • Bacterial: e.g. <i>S. aureus</i> • Fungal • Granulomatous: TB, syphilis, leprosy • Non-infectious <ul style="list-style-type: none"> • Sarcoidosis • Granulomatosis with polyangiitis • Irritant <ul style="list-style-type: none"> • Dust • Chemicals • Pollution | <ul style="list-style-type: none"> • Rhinitis medicamentosa <ul style="list-style-type: none"> • Topical decongestants • Hormonal <ul style="list-style-type: none"> • Pregnancy • Estrogens • Thyroid • Idiopathic vasomotor |

Table 11. Nasal Discharge: Character and Associated Conditions

| Character | Associated Conditions |
|----------------|---|
| Watery/mucoid | Allergic, viral, vasomotor, CSF leak (halo sign) |
| Mucopurulent | Bacterial, foreign body |
| Serosanguinous | Neoplasia |
| Bloody | Trauma, neoplasia, bleeding disorder, hypertension/vascular disease |

***Rhinitis medicamentosa:** rebound congestion due to the overuse of intranasal vasoconstrictors. For prevention, use of these medications for only 5-7 d is recommended.

*Congestion reduces nasal airflow and allows the nose to repair itself (i.e. washes away the irritants). Treatment should focus on the initial insult rather than target this defense mechanism.

Vasomotor Rhinitis

- Neurovascular disorder of nasal parasympathetic system (vidian nerve) affecting mucosal blood vessels
- Nonspecific reflex hypersensitivity of nasal mucosa
- Caused by:
 - Temperature change
 - Alcohol, dust, smoke
 - Stress, anxiety, neurosis
 - Endocrine: hypothyroidism, pregnancy, menopause
 - Parasympathomimetic drugs
 - Beware of rhinitis medicamentosa: reactive vasodilation due to prolonged use (>5 d) of nasal drops and sprays (Dristan®, Otrivin®)

Clinical Features

- Chronic intermittent nasal obstruction, varies from side to side
- Rhinorrhea: thin, watery
- Mucosa and turbinates: swollen
- Nasal allergy must be ruled out

Treatment

- Elimination of irritant factors
- Parasympathetic blocker (Atrovent® nasal spray)
- Steroids (e.g. beclomethasone, fluticasone)
- Surgery (often of limited lasting benefit): electrocautery, cryosurgery, laser treatment or removal of inferior or middle turbinates
- Vidian neurectomy (rarely done)
- Symptomatic relief with exercise (increased sympathetic tone)

Summary II (from Toronto notes)

Allergic Rhinitis (Hay Fever)

Definition

- Rhinitis characterized by an IgE-mediated hypersensitivity to foreign allergens
- Acute-and-seasonal or chronic-and-perennial
- Perennial allergic rhinitis often confused with recurrent colds

Etiology

- When allergens contact the respiratory mucosa, specific IgE antibody is produced in susceptible hosts
- Concentration of allergen in the ambient air correlates directly with the rhinitis symptoms

Epidemiology

- Age at onset usually
- More common in those with a personal or family history of allergies/atopy

Clinical Features

- Nasal: obstruction with pruritus, sneezing
- Clear rhinorrhea (containing increased eosinophils)
- Itching of eyes with tearing
- Frontal headache and pressure
- Mucosa: swollen, pale, and “boggy”
- Seasonal (summer, spring, early autumn)
 - Pollens from trees
 - Lasts several weeks, disappears and recurs following year at same time
- Perennial
 - Inhaled: house dust, wool, feathers, foods, tobacco, hair, and mold
 - Ingested: wheat, eggs, milk, and nuts
 - Occurs intermittently for years with no pattern or may be constantly present

Complications

- Chronic sinusitis/polyps
- Serous otitis media

Diagnosis

- History
- Direct exam
- Allergy testing

Treatment

- Education: identification and avoidance of allergen
- Nasal irrigation with saline
- Antihistamines (e.g. diphenhydramine, fexofenadine)
- Oral decongestants (e.g. pseudoephedrine, phenylpropanolamine) • topical decongestant (may lead to rhinitis medicamentosa)
- Other topicals: steroids (fluticasone), disodium cromoglycate, antihistamines, and ipratropium bromide
- Oral steroids if severe
- Desensitization by allergen immunotherapy