Chronic Non-Infective Rhinosinusitis

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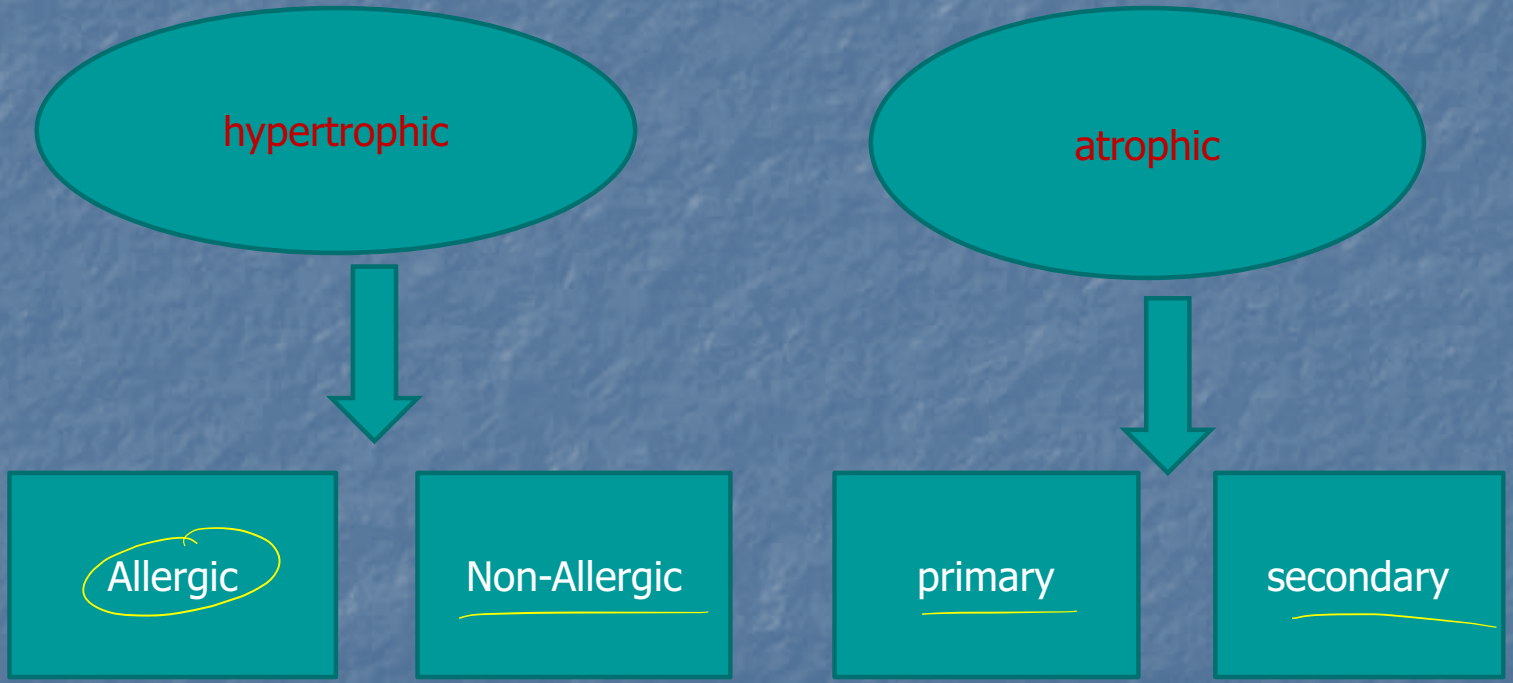
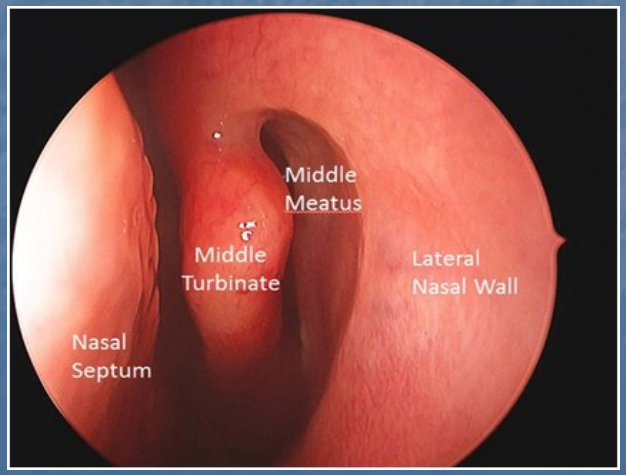
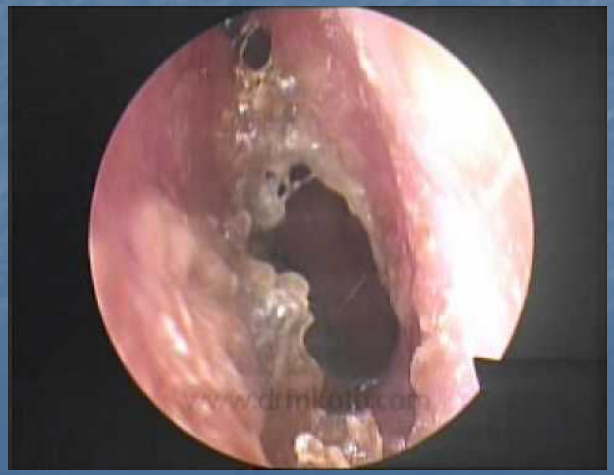
Chronic non-infective rhinosinusitis



Atrophic Rhinitis

- It is rare disease in Jordan, but more common in tropical countries like India and the prevalence there is 1%.
- It affects young females more than males
- It is also known as ozaena → foul smell
- There is localized (rhinitis sicca) and diffuse forms





Types of Atrophic Rhinitis

- **A. Primary atrophic rhinitis**

Causes; Low hygiene, hormonal, nutritional deficiencies, autoimmunity, hereditary, infective

- **B. Secondary atrophic rhinitis**

Causes

- Post surgical (removal of turbinates)
- Traumatic
- Post radiotherapy
- Post chronic granulomatous diseases

commonest microorganisms found in Atrophic Rhinitis;

Klebsiella ozenae, coccobacillus, diphtheroids

Clinical features of Atrophic Rhinitis

Diffuse → in young female

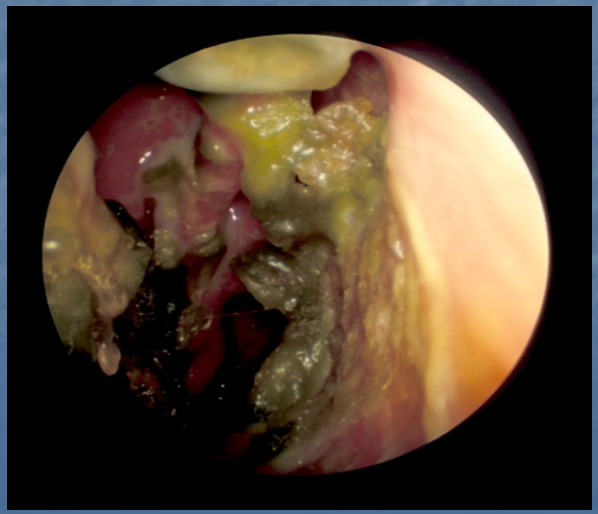
- Anosmia
- Ozena (foul smell from the nose)
- Extensive nasal crusting
- Nasal blockage → from the accumulation of crust
- Epistaxis
- Subjective nasal congestion
- Enlargement of the nasal cavity
- Resorption of turbinates
- Depression

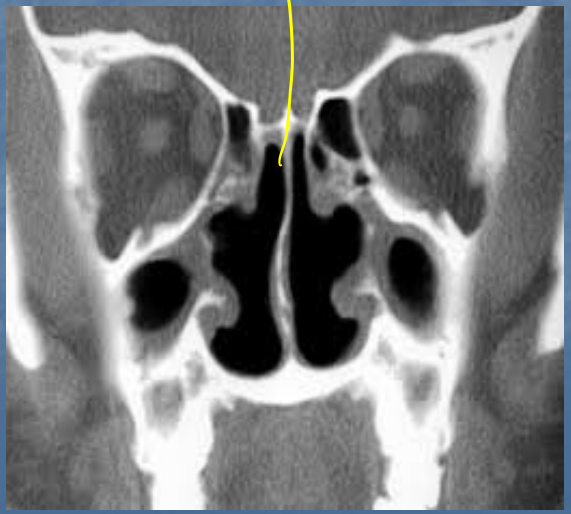
granulomas ddx:

stewarts, wegener's

Diagnosis

- Clinical features
- Endoscopy and Biopsy
- radiology





Treatment

- Medical treatment
  - Local : Lubricants, Alkaline nasal washes, antibacterials
  - Systemic : Oral antibiotics, Replacement therapy
- Surgical treatment

Local therapy

- Irrigations with:

Saline, Sodium bicarbonate, Antibiotic solution (Gentamycin solution 80mg/L)

- Anti-drying agents(lubricating):

  Glycerin, Mineral Oil
- local antibiotics
- Local placental extracts??

Systemic treatment

- Oral antibiotics:

  Tetracycline, Ciprofloxacin, Streptomycin

- Medications avoidance:

  Vasoconstrictors, Topical steroids

- Replacement Therapy;

  Vitamin A, potassium iodide, iron therapy, estrogen

Surgical treatment

- Young's procedure:
  - Circumferential flap elevation 1 cm cephalic to the alar rim. flap to close one nostril and the other side after 3-6 months
  - Implants placed submucosaly along the septum and nasal floor
  - Cervical sympathectomy
- Non-surgical nasal closure:

  silastic obturator

Chronic non-allergic non-infective Rhinosinusitis

- Disturbance of autonomic innervation of the nose and sinuses is the underlying mechanism of all these forms
- All present with nasal blockage and rhinorrhea
- Carful history and proper examination helps in the diagnosis
- Almost all responding well to intranasal steroids

Non-allergic Non-infective Rhinosinusitis

- Vasomotor → vasoconstrictor & vasodilator أدوية مركبة
- Drug induced:
  - **Alpha and beta blockers, decongestants, NSAIDs, cocaine**
- Hormonal:
  - pregnancy, hypothyroidism, honey-moon rhinitis
- Mechanical irritation:
  - Smoking, colds, formaldehyde, glues
- Senile → B2 transferrin scan or glucose + CT to differentiate with CSF rhinorrhea
- Eosinophilic → negative skin prick test

* They all work on the autonomic regulation of the nose & paranasal sinus

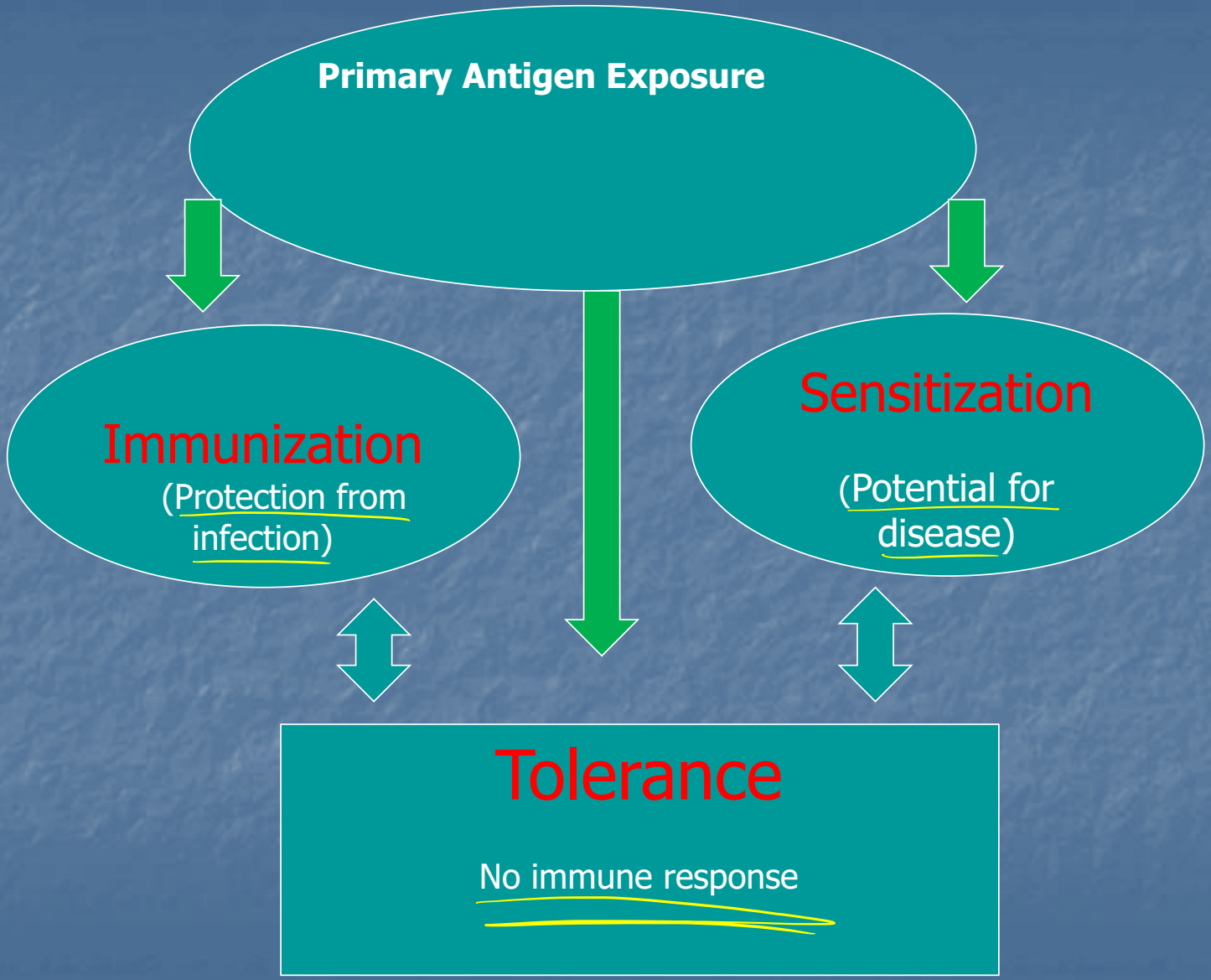
Allergic Rhinitis

Definition;

It is an IgE mediated hypersensitivity Reaction of the nose to a foreign substance that is characterized by bouts of sneezing, nasal congestion and rhinorrhea.

M&F equally affected

less in African


Primary Antigen Exposure
Immunization
(Protection from infection)
Sensitization
(Potential for disease)
Tolerance
No immune response

Epidemiology

- 10-40% of population world wide affected and the prevalence is yearly increasing.
- More common among developed countries
- More common in children
- Males and females are equally affected
- It is the most common allergic condition
- 75% of patients with bronchial asthma have allergic rhinitis

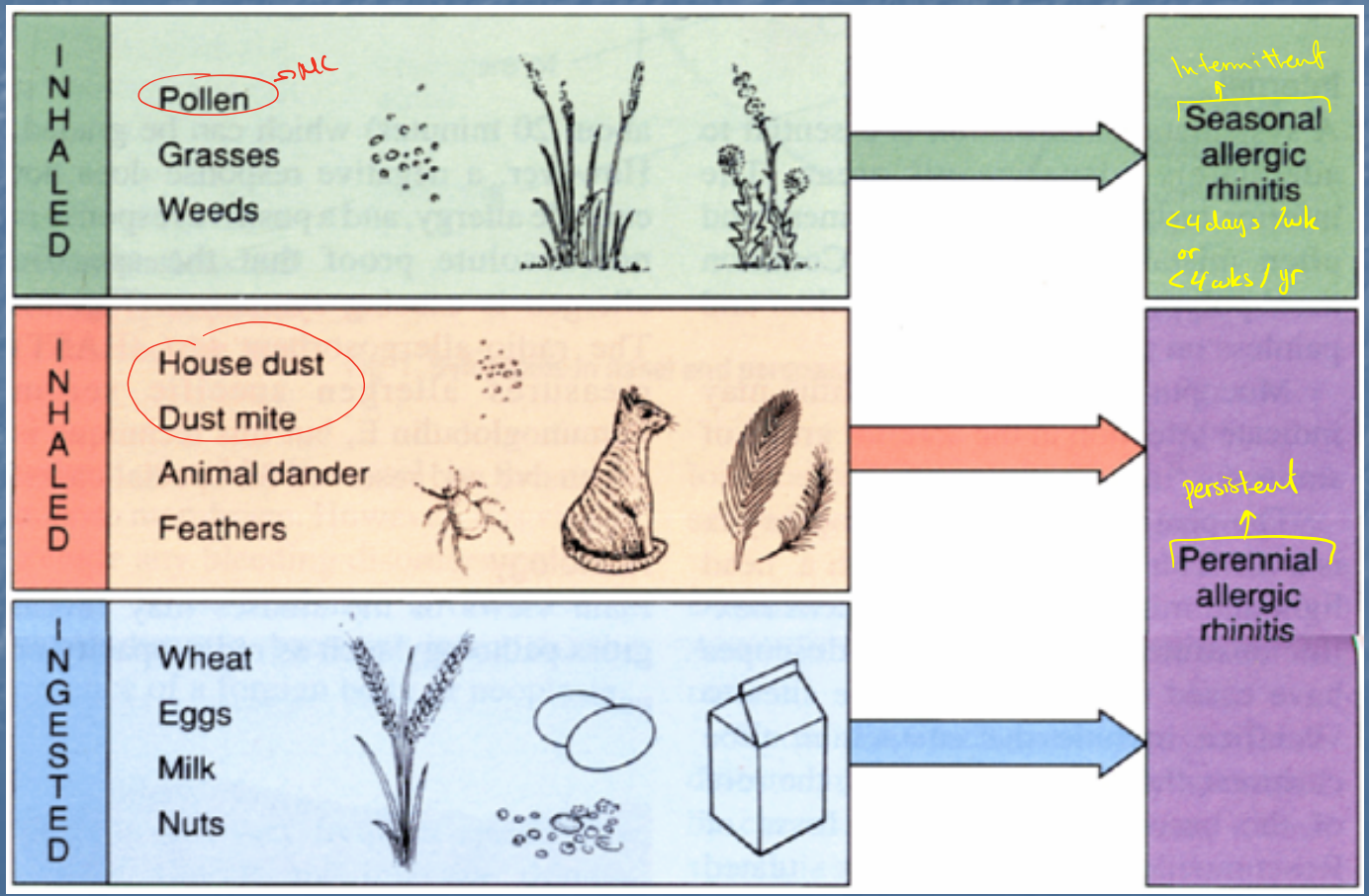
Etiology and predisposing factors

- **Genetic Factor**

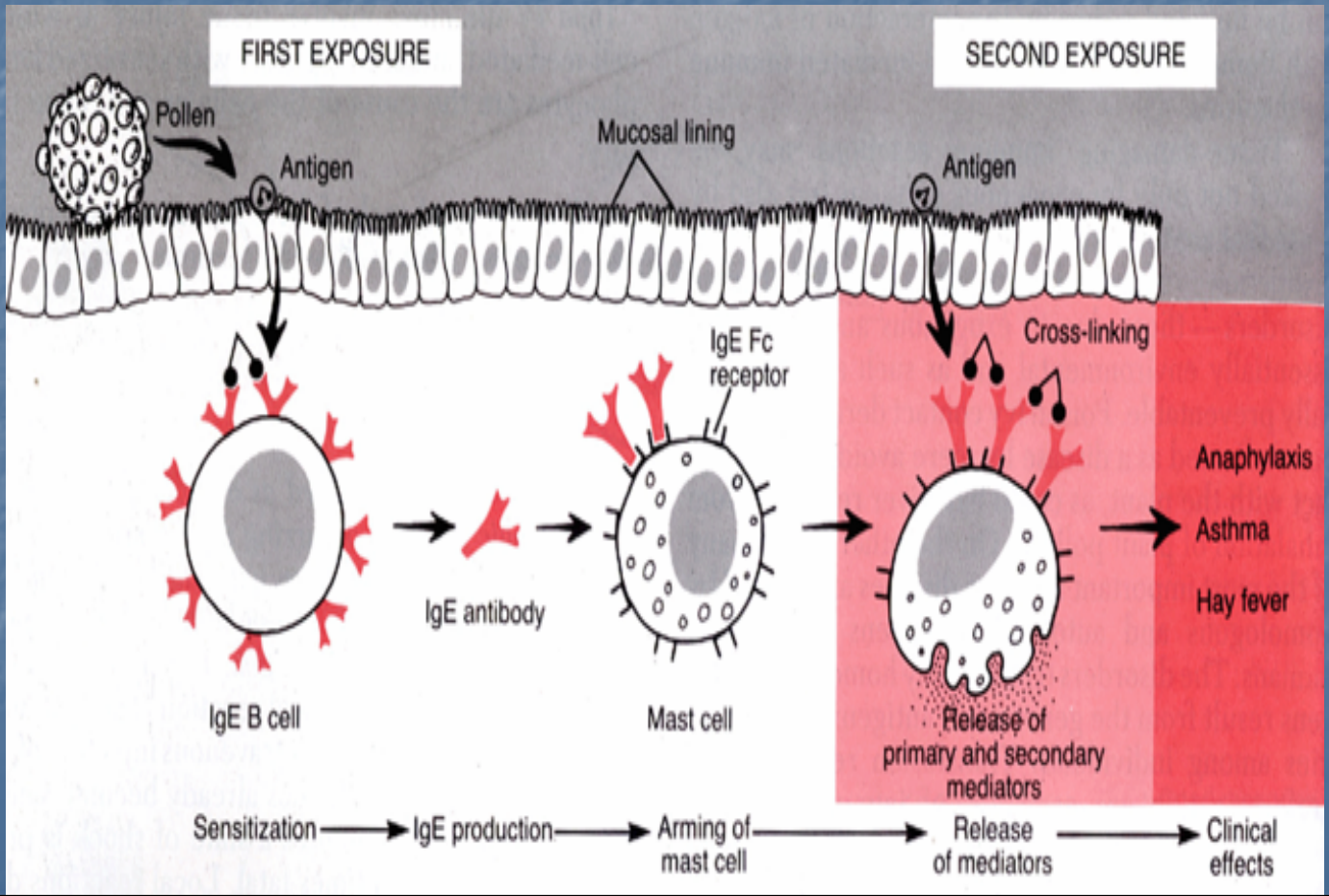
Parent with allergy	% Chance of disease
one parent	20-40
two parents	40-70

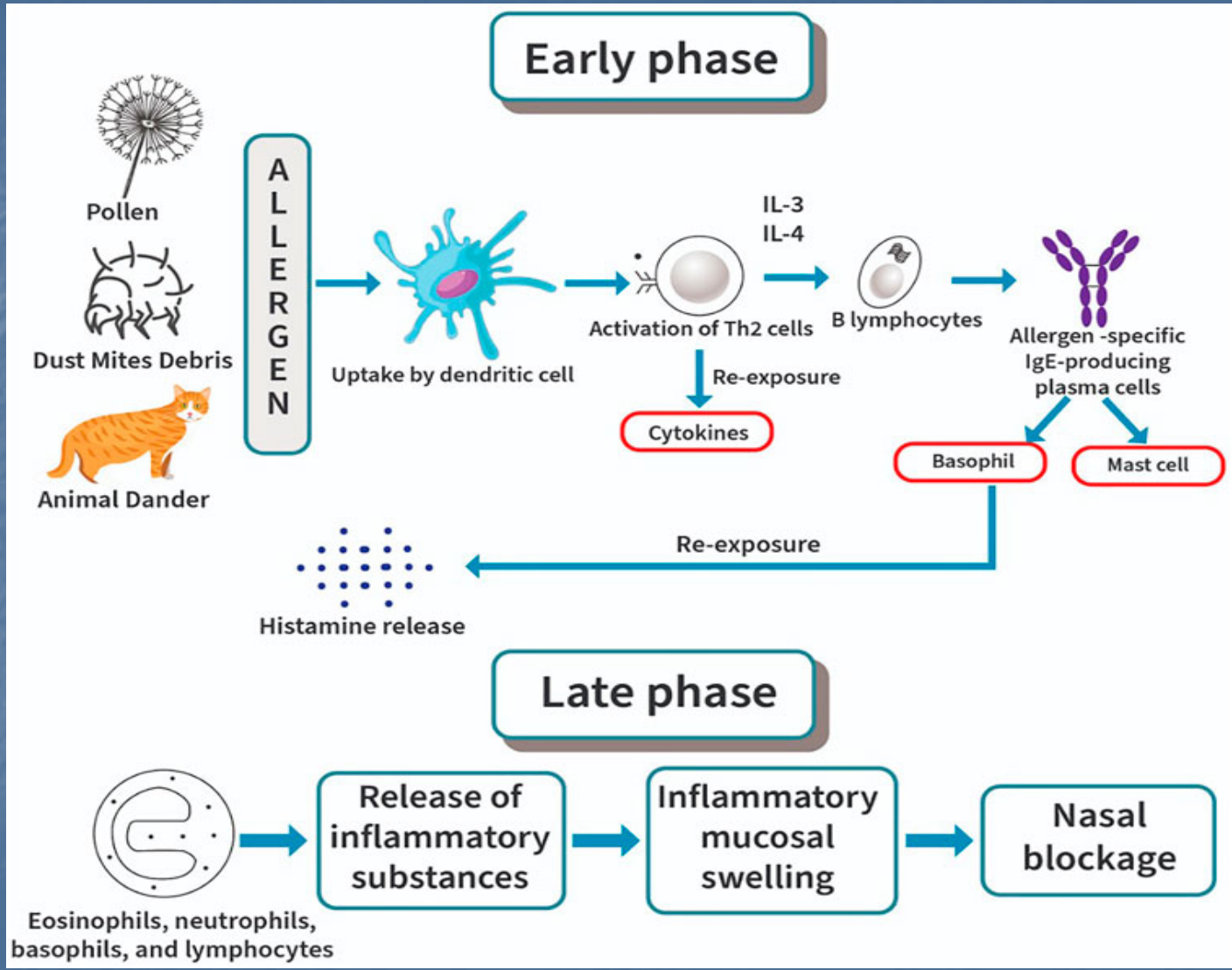
- **Month of the birth**
- **Infant feeding practices**
- **Infection in childhood**
- **Environmental factors (pollution)**
- **Immunization**
- **Excess hygiene**

Common Allergens



Pathophysiology




Early phase
Pollen
Dust Mites Debris
Animal Dander
ALLERGEN
Uptake by dendritic cell
Activation of Th2 cells
IL-3
IL-4
B lymphocytes
Allergen -specific IgE-producing plasma cells
Re-exposure
Cytokines
Basophil
Mast cell
Re-exposure
Histamine release
Late phase
Eosinophils, neutrophils, basophils, and lymphocytes
Release of inflammatory substances
Inflammatory mucosal swelling
Nasal blockage

Mechanism of sensitizing lymphocytes

- Inhaled particles (allergens) (trigers) complement pathways
- complement pathways(stimulates) macrophages (leads) to phagocytosis
- Phagocytosis generates cytokines
- Cytokines + antigens leads to the formation of histocompatibility complexs on the cell surface
- histocompatibility complex cause sensitisation of T-Lymphocytes
- Sesitized T-lymphocytes stimulates T helper Lymphocytes
- T- helper lymphocytes stimulates B - lymphocytes (results in) secretion of Immunoglobulin (IgA, IgD, IgM, IgG, IgE) .
- IgE combines with receptors on Mast Cells and Basophiles causing sensitized state=

Diagnosis

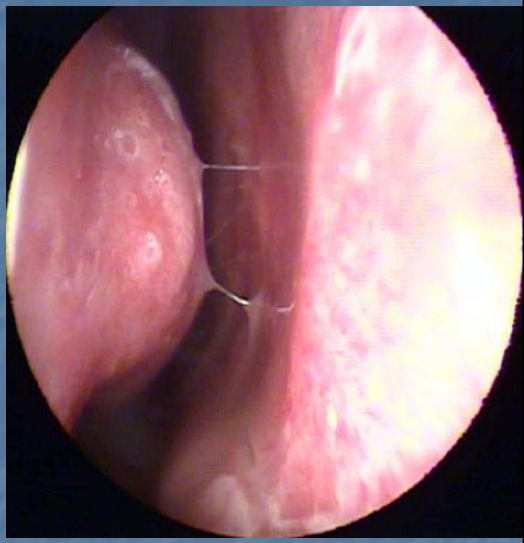
- History
  - Hx of typical symptoms
  - Family hx
  - Bronchial asthma / atopy
  - Seasonal variations
- Physical examination
- Investigations

Symptoms of AR

- Sneezing, Nasal itching
- Nasal congestion(stuffy blocked nose)
- Watery nasal discharge
- Itchy, watery eyes
- Postnasal drip
- Itching in the palate

Physical Changes of AR

- Pale blue, edematous turbinate's
- Clear, watery nasal discharge
- Crease from nasal salute
- Lymphoid hyperplasia
- Watery, itchy eyes
- Cobble-stone pharynx



Cobble-stone pharynx

Investigations

- Serum IgE
- Serum Eosinophils
- Nasal smear for Eosinophils
- Skin Prick Test → MC done test
- RAST
- Nasal Challenge Test

(the most sensitive and specific test)

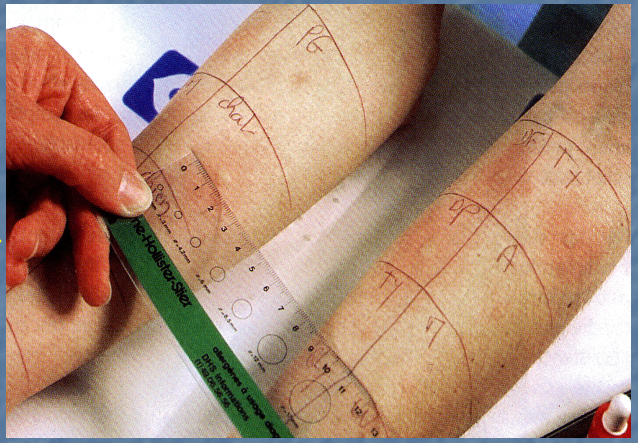
Rarely usually not done bcs it can cause anaphylaxis

Skin prick testing

- The most commonly done test
- The simplest and most effective test for immediate-type allergy diagnosis
- Skin tests are cheap and quick to perform
- Very safe when using inhalant allergen for asthma or rhinitis diagnosis
- Standardized extracts available
- The results are clear and very informative for the patient and relatives

Measurement of the wheal reaction

15 – 20 minutes after testing



Skin tests validation

Negative control (Saline) : negative

Positive control (Histamine): **> 3 mm**

Allergen test

< 3 mm
mm

SPT negative

≥ 3

SPT positive

Differential Diagnosis

- **Non allergic:**
  - – Changes in weather, changes in temperature, lack of humidity
  - – Strong odors, cigarette smoke, irritants (LPR/GERD), hormonal rhinitis, vasomotor rhinitis, drug induced rhinitis,
- **Acute Infectious**: viral , bacterial, fungal,
- **Chronic rhinosinusitis**
- **Cystic fibrosis**
- **Mucociliary defects**
- **Cerebrospinal rhinorrhea**
- **Granulomas:** Sarcoid, Wegener's, Midline Stewart granuloma

aspergillus or candida

Allergic Rhinitis and it's Impact on Asthma (ARIA)

Classification

Intermittent

- < 4 days per week
- or < 4 weeks

Persistent

- ≥ 4 days per week
- and ≥ 4 weeks

Mild

normal sleep
& no impairment of daily activities, sport, leisure
& normal work and school
& no troublesome symptoms

Moderate-severe

one or more items

- abnormal sleep
- impairment of daily activities, sport, leisure
- abnormal work and school
- troublesome symptoms

ARIA Report 2001

Allergic Rhinitis and Quality of Life

Mild intermittent

Mild persistent

Moderate/ severe intermittent

Moderate/ severe persistent

Quality of life not altered

Quality of life altered

Sleep disturbance, Fatigue, **Poor concentration**, **Irritability**

Limited activities, **MIssed** days of work or school

Allergen Avoidance

Best treatment option

Patient Education

Management

Specific Immunotherapy

Pharmacotherapy

* Best is intranasal steroids

Control Indoor Allergens

- **Dust mite allergens:**
- **Effective:**
  - encase pillows
  - encase mattresses and box springs
  - wash bedding weekly
  - remove stuffed animals, toys from bed
  - vacuum weekly (with mask and avoid room afterwards
  - use quality vacuum

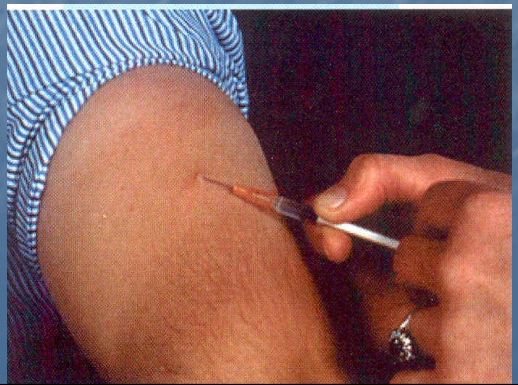
- **More difficult or unproven changes:**
  - reduce indoor relative humidity
  - replace carpets with wood flooring
  - replace upholstered furniture with leather, vinyl or wood
  - replace draperies
  - avoid living in basements

Control of Outdoor Allergens:

- Using a face mask during house cleaning, gardening, outdoor sports, and other activities can reduce your exposure to dust and mold allergens.
- It is important to select a well fitting model to avoid inadequate seals

Desensitization
(Immunotherapy)

- is the process of administering increasing doses of an allergen.
- Treatment is designed to render an allergy patient less sensitive to offending antigen or antigens
- Complete elimination of the allergy reaction is seldom, if ever achieved.



Specific Immunotherapy (Desensitization)

- Commonly to these substances:
- Wasp/Bee venom allergy
- Pollen allergy
- House dust mites allergy
- Cat / Dog allergy
- Molds allergy

Limitations of Immunotherapy usage

- Not in use if there is more than one allergen
- Success rate is not high (60-70%)
- Recurrence rate is high
- Expensive
- Compliance of patients for long usage(2-3 years) is not usually guaranteed

Pharmacotherapy

Just symptomatic treatment → does not cure

- **The following drugs are in use for allergic rhinitis:**

- ✓ Antihistamines → MC used
- ✓ Decongestants
- ✓ Intranasal corticosteroids → Most effective
  - used in Bronchial asthma & nasal polyposis
- ✓ Systemic steroids
- ✓ Intranasal cromolyn
- ✓ Anticholinergics
- ✓ Antileukotriens
- ✓ Anti IgE

Antihistamines

- They also block H1 receptors
- They are the most commonly used preparation for allergic rhinitis
- More helpful in mild form of AR
- Mainly reducing hypersecretions
- New generations have less side effects, rapid and longer action, non-sedating effect and non anticholinergic effects

"Non-Sedating" Antihistamines:

- Loratidine
- Desloratidine
- fexofenadine
- Cetirizine
- levocitrizine

Intranasal Corticosteroids

- They are the most effective drugs for treatment of nasal symptoms of allergic rhinitis
- With continued use block the hypersensitivity of the nasal mucosa. Decreasing symptoms and congestion
- Side effects; dryness, bad taste

Intranasal corticosteroids

- Beclomethasone
- Budesonide
- Fluticasone furoate
- Mometasone furoate Most used
- Fluticasone propionate
- Triamcinolone

Corticosteroids

Oral and Injectable

not advisable

- Corticosteroids block early in AA metabolism to stop inflammatory mediators
- Prednisone: 1 mg/ kg a day (60-80 mg)
  - x 7 days to 2 weeks
- Methylprednisolone Medrol-Dosepak
  - 5 day taper
- Hydrocortisone: 200-500 mg
- Dexamethasone: Decadron®
  - 4-10 mg a day
- Triamcinolone Acetonide: Kenalog®
  - 40-80 mg IM- long acting salt form lasts for 2-3 months
- Inexpensive- except Dr. visit and fees
- Most new practitioners more reluctant to adminster

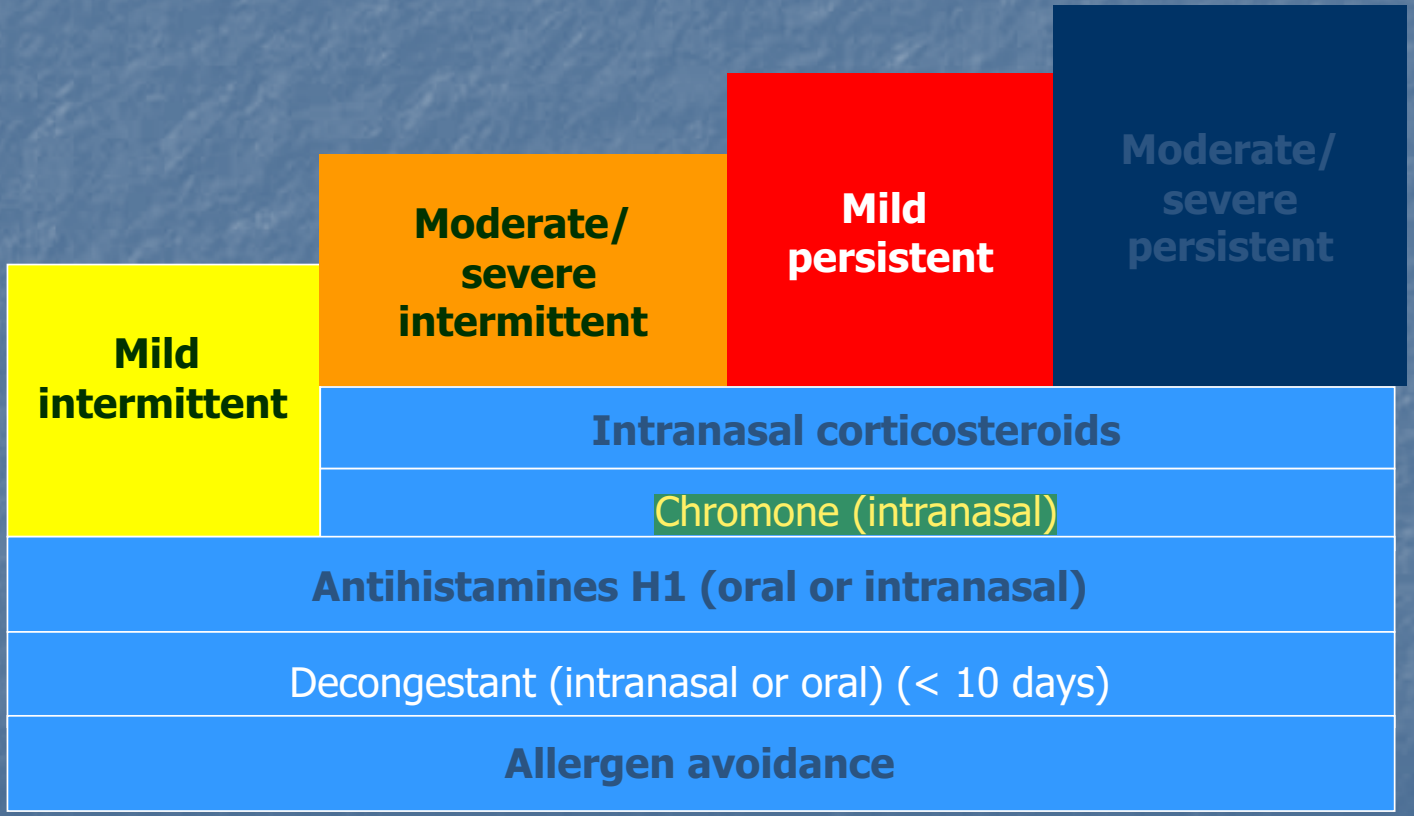
Leukotriene agents

- Marginal efficacy for seasonal allergies
  - 10 mg adults
  - 5 mg children
  - 2-4 mg for infants
- Montelukast (Singulair)®
- Zifurlukast (Accolate)®

Cell Stabilizers

- Cromolyn Sodium Intal®
  - 2 puffs each nostril four times a day
- Best if start 2-4 weeks before allergy time of the year
- NO side effects

Pharmacotherapy for allergic rhinitis
(according to ARIA guidelines)



Actions of Various Nasal Preparations in the Treatment of Allergic Rhinitis

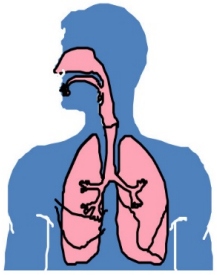
Nasal Preparation	Sneezing	Itching	Rhinorrhoea	Congestion
Antihistamines	+++++	++++	+++	0
Anticholinergics	0	0	+++++	0
Corticosteroids	+++++	+++++	+++	+++
Decongestants	0	0	+	+++++
Mast cell stabiliser	+++++	+++	+	0
Antileukotrienes	+++	++	0	++++

Comorbid conditions Associated with Allergic Rhinitis

- Bronchial asthma
- Otitis media with effusion very common
- Rhinosinusitis
- Nasal polyps
- Maxillo-facial abnormalities
- Psychologic dysfunction
- Anxiety
- Depression

Conclusions

- Allergic rhinitis is a common and an increasing disease
- It has a huge social and economic burden
- It is commonly leading to other comorbidities
- A strong correlation with asthma is present



Multidiciplinary Approach

Allergist / Immunologist
(pulmonologists)

Allergic evaluation
NSAID sensitivity
Differential diagnosis
Lack of control
Complications
Exacerbations
(Nasal endoscopy)

mild disease management, follow-up

Nasal endoscopy
Lack of control
Complications
Indication for surgery

Allergic evaluation
Lower airway evaluation
NSAID sensitivity
Lack of control

Rhinitis + multimorbidities

PCP
Pediatrician

mild disease management, follow-up

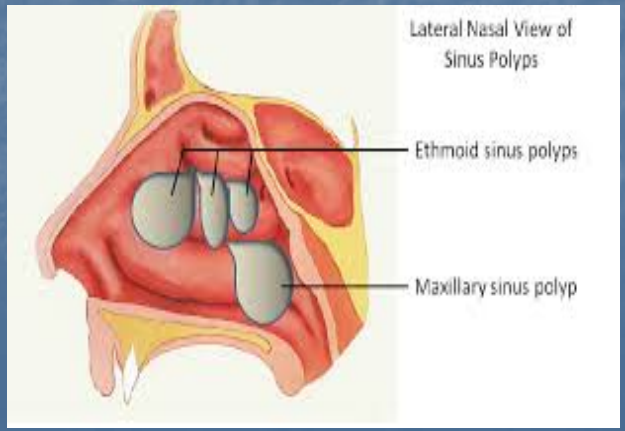
Nasal endoscopy, Differential diagnosis
Lack of control, Complications, Indication for surgery

ENT specialist
Rhinologist

Nasal polyps

- Comes from Latin which means multiple feet
- it is not a tumor, but a mass
- no known etiology

- Pathophysiology: accumulation of fluid in the interstitial space

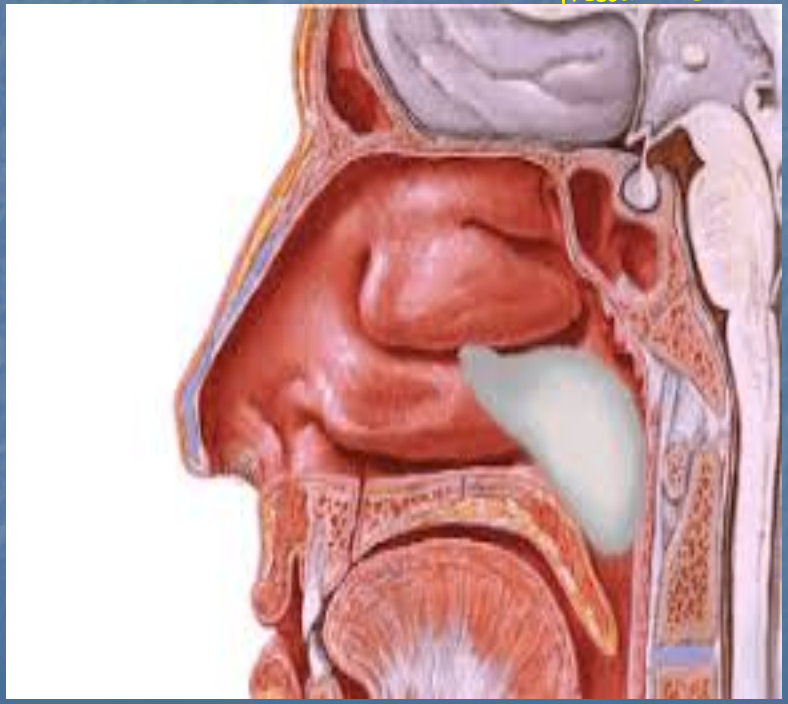


- Nasal symptoms: nasal blockage, rhinorrhea, anosmia, headaches

Antrochoanal polyp (ACP)

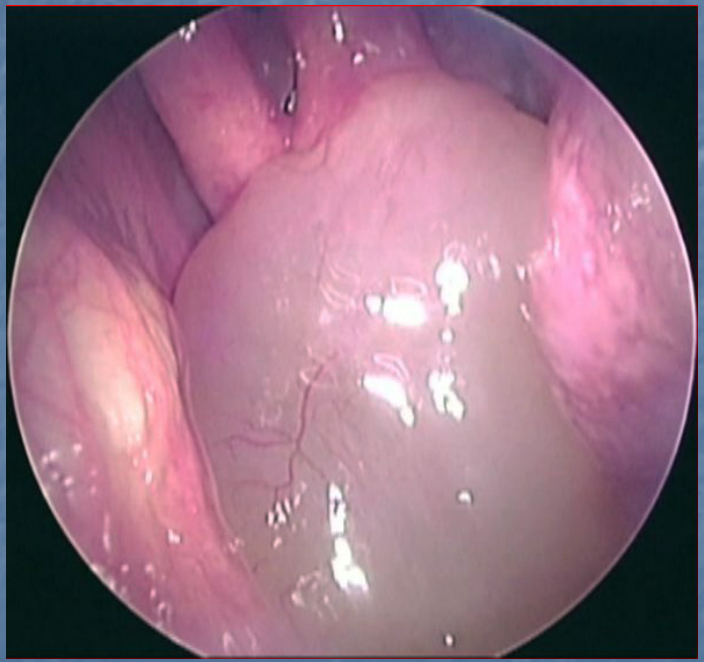
- From maxillary sinus
- Ass. w/ infxn
- Trx: surgical excision
- Recurrence is rare
- single
- Unilateral
- Usually affecting children & adolescent

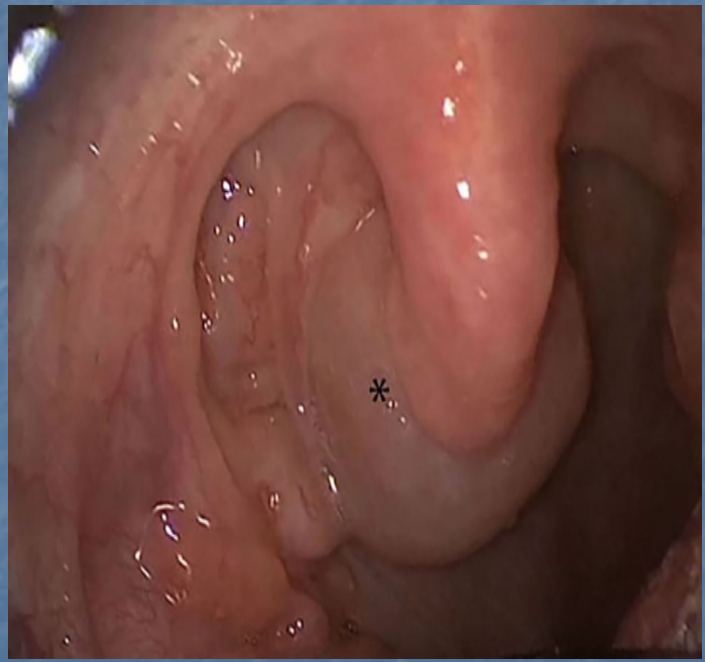
Demonstration



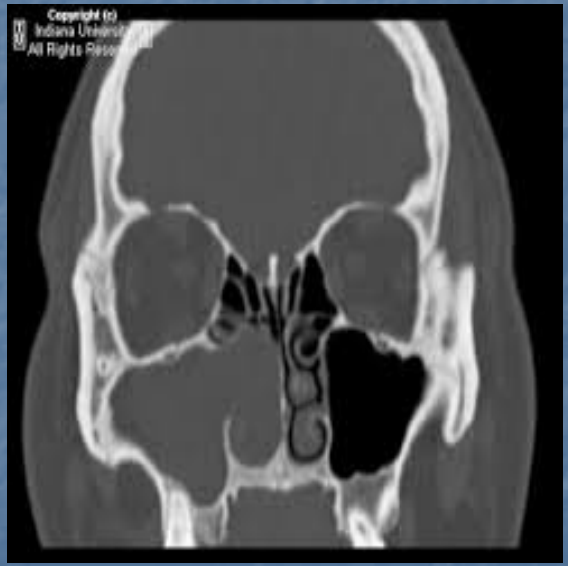
Endoscopic view of ACP

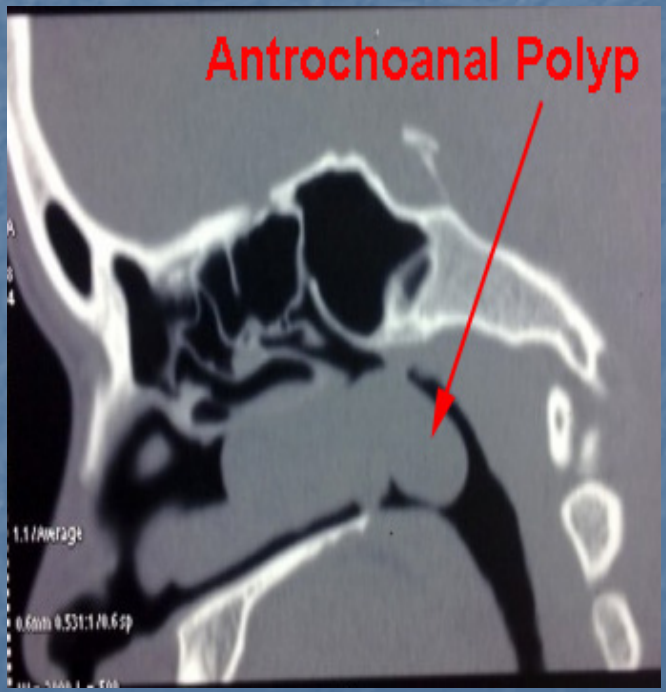
Intranasal and nasopharyngeal parts of antrochoanal polyp





Radiology of antrochoanal polyp





Ethmoidal polyps

@ Multiple

Trx: oral corticosteroids, surgery

Nasal polyps

Antrochoanal Polyp (ACP)

- Arising from maxillary sinus
- Infection is the usual cause
- Single
- Unilateral
- Affects adolescent and children
- Treatment is surgical
- Recurrence is rare

Ethmoidal Polyp

- Arising from ethmoid region
- No known etiology
- Multiple
- Bilateral
- Affects adults
- Treatment: surgery or/and steroids
- Recurrence common

THANK YOU