



12- Nose II

Objectives:

- Acute & chronic rhinitis.
- Allergic & non-allergic rhinitis.
- Vestibular & furunculosis .
- Nasal polyps (allergic & antrochoanal) etc.
- Radiology illustration (e.g. CT scan)

Resources: Team 435, Slides, Dr. notes.

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Rhinitis:

- **Rhinitis** refers to inflammatory changes in the nasal mucosa. As the nasal mucosa is continuous over the nose and sinuses, there is nearly always some inflammatory change in the sinuses as well. Hence Rhinosinusitis¹ is a better term.
- Types: - acute rhinitis (less than 3 months) - chronic rhinitis (more than 3 months)
- Types based on etiology: (1) Infectious rhinitis (2) Vasomotor rhinitis (3) Occupational rhinitis (4) Hormonal rhinitis² (5) Drug-induced rhinitis (6) Gustatory rhinitis (7) Nonallergic rhinitis with eosinophilia syndrome (NARES)
- Continuing inflammatory change or repeated episodes of recurrent rhinosinusitis so that episodes merge one with the other are common – Chronic Rhinosinusitis (CR).
- Continuing mucosal inflammation causes polypoid swelling of the nasal lining (Nasal Polyps, hence the close association between Chronic Rhinosinusitis and Nasal Polyps “CRNP”).

Acute Rhinitis:

- The **common cold** is the result of viral infection, but secondary bacterial infection may supervene.
- It is self-limiting and no treatment is required other than an antipyretic, such as paracetamol. Discourage the prolonged use (more than 5 days) of vasoconstrictor nose drops owing to their harmful effect on the nasal mucosa (rhinitis medicamentosa).
- Many patients use menthol inhalations, systemic decongestants and a variety of cough linctus preparations, and find these helpful in controlling symptoms, but evidence of any sustained benefit is weak.
- (common cold & influenza & Para influenza) *“influenza & Para Influenza viruses are more severe than common cold”*
- Case : patient has symptoms of acute rhinitis like congestion and secretions that persisted for less than a week → Do we need to give the patient anything? NO! NO antibiotics and NO steroids we only need supportive treatment like bed rest and hydration.
- Another thing that can happen to our previous patient is to have a secondary infection and then it may be considered an acute sinusitis → Do we need antibiotics in this case? YES! *more details in table below:*

❖ Clinical presentation:

- Burning sensation in the nose
- obstruction
- hyposmia or even anosmia
- nasal congestion
- secretions

¹ because usually sinusitis will accompany rhinitis attacks

² Menstruation, pregnancy, Untreated hypothyroidism ,Sexual excitement (Honeymoon rhinitis)

Acute sinusitis	Common cold
<ul style="list-style-type: none"> - Rebound happens. - Rebound is worsening after initial improvement (like having secretions, pain,) 	<ul style="list-style-type: none"> - Symptoms present for 6 days for example, (<u>without</u> rebound) in that case we recommend conservative treatment and wait - If symptoms are persistent for more than 10 days→ not good! it means that it is bacterial sinusitis not common cold
Flu	Common cold
<ul style="list-style-type: none"> - The patient is sick all over (systemic) and part of that package is the nose. - e.g.: muscles pain, headache, sore throat, cough 	<ul style="list-style-type: none"> - Limited to nose - (no fever, no other symptoms: not systemic)

❖ **Etiology:**³ Conveyed by contact or airborne droplets

- **Virus:** (adenovirus, picornavirus, rhinovirus, coronavirus, Para influenza virus, respiratory syncytial virus, enterovirus).
- **Nasal obstruction:** Pyrexia (fever).
- **Bacterial:** *Streptococcus pneumoniae*, staphylococcus aureus, *Haemophilus influenzae*, Streptococcus pyogenes, Klebsiella pneumoniae and Moraxella catarrhalis.

❖ **Clinical stages:**

- Dry prodromal stage (few hours).
- The Catarrhal stage (few days). Catarrh is inflammation of the mucous membranes in one of the airways or cavities of the body, usually with reference to the throat and paranasal sinuses.
- Mucous stage (3-5 days).
- Resolution stage (5 days- 1 week).
- Secondary bacterial infection.

³ in chronic we see more gram -ve like pseudomonas

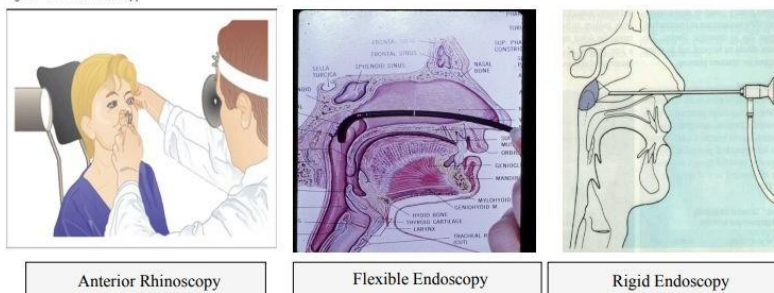
❖ **table form 433:**

Clinical features “stages” of common cold:	
Stage	Features
Ischemic	- 1-3 days of incubation period - Sneezing - Loss of smell “obstructed olfactory area” - Burning sensation in the nasopharynx
Hyperemic	- profuse rhinorrhea - Nasal obstruction - Pyrexia
Secondary infection	Discharge becomes yellow or green “this happens usually after the common cold resolve by its own i.e. 1 week later”
Resolution	This means resolution of both common cold the 2ry infection. - - occurs 5-10 days (if persist >10 days => Bacterial cause)

❖ Examination:

- Anterior Rhinoscopy
- Endoscopic Examination: 2 types: flexible “pic2” and rigid “pic3”

Fig. 2.1 Anterior rhinoscopy



for children , poor cooperative patient , the image is not the same quality as the rigid endoscope.

better image quality

❖ Treatment:

- **Prophylactic:** avoid contact with patient
- **Therapeutic:**
 - Rest
 - Analgesics
 - Decongestant
 - Antibiotic “rarely given because in 95% of the cases it is viral”



-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*

- Can progress into acute bacterial rhinosinusitis

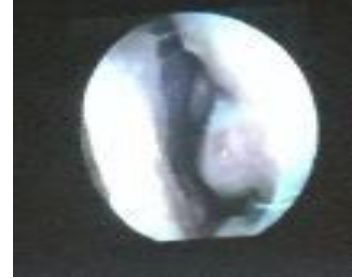
❖ Influenza rhinitis:

- Influenza A, B, C viruses
- Similar symptoms of common cold but with more constitutional symptoms.
- Same management
- Role of influenza vaccine

Chronic Rhinitis:

❖ Classification:

Classifications:	
<p>- Specific:</p> <ol style="list-style-type: none"> 1) Syphilis 2) Wegner's granuloma 3) Medline lethal granuloma 4) Sarcoidosis 5) Mycobacteria 5) Atrophic rhinitis 	<p>- Non-specific:</p> <ol style="list-style-type: none"> 1- Simple chronic rhinitis 2- Hypertrophic rhinitis 3- Atrophic rhinitis



➤ Specific:

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

➤ Non-specific:

- **1- Atrophic rhinitis:** *Other names: Dry rhinitis, Rhinitis sicca. Open-nose syndrome, Ozena.*
- **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).
- **Triad 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 triad, you must take swab and send for culture

Primary atrophic rhinitis	Secondary atrophic rhinitis
<p>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)</p> <p>Pathology: 1. degeneration of epithelium glands • Thick crust in the nose-infected • Foul smelling 2-atrophy of the bony turbinates</p> <p>Treatment: Removal of the crust Glucose 25% in glycerin drops to lubricate the nose Local or systemic antibiotic if bacterial infection Surgical measures if severe and lead to obstruction</p>	<ul style="list-style-type: none"> • Secondary to severe deviated nasal septum (DNS), syphilis, lupus, excessive operative procedures (turbinectomy, 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

→ **Surgical therapies:**

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

- **2- Simple chronic rhinitis:**

- **Etiology:**

- Neighboring infections e.g. chronic tonsillitis. "GERD can cause it as well"
- Adenoids "obstructing normal mucosal secretions => stagnation and good environment for bacteria to grow."
- Vasomotor rhinitis "happen as a result of autonomic disturbance".
- Chronic irritation e.g. dust, smoker.
- Swelling of inferior turbinate.

- **Treatment:** Correction of any predisposing factors.

- **3- Hypertrophic rhinitis:**

- Etiology: Permanent hypertrophic changes **due to advanced stage of simple chronic rhinitis.**

- **4-Rhinitis medicamentosa:**

- **Etiology:** Induced by sympathomimetic nasal decongestant drops" like atropine "
- If we need to use sympathomimetic nasal decongestant drops, then it must be **not more than 5 days"**.

✓ Q: What if you need to use decongestant for more than 5 days?

✓ Answer: **We have to give systemic sympathomimetic decongestants like pseudoephedrine "No rebound effect"**.

- **Clinical features:** Like simple chronic rhinitis.

"The condition is the result of over medication with local nasal decongestants causing rebound phenomenon occurs resulting in turbinate hypertrophy. If the decongestant treatment is repeated the condition become rapidly self-perpetuating and a chronic nasal obstruction unresponsive to decongestant results. The treatment is immediate cessation of the decongestant with replacement by nasal or systemic steroid. If this is not successful, then inferior turbinectomy may be required."

- **Treatment:** Like simple chronic rhinitis + Reduction of inferior turbinate.

Allergic Rhinitis:

- ❖ Allergy is an abnormal reaction of the tissues to certain substances.
- ❖ 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.
- ❖ Could be seasonal or perennial.

Pathophysiology:

- The nasal mucosa is at the entrance to the respiratory tract. It is made up of ciliated epithelium and produces a mucus blanket which helps protect the airway from inspired pollutants, allergens and infective agents.
- The epithelium is continuous with that of the rest of the respiratory system and is subject to much the same pathologies.
- The allergen induces production of IgE antibodies which on subsequent exposure bind with the allergen to form antigen–antibody complexes. These complexes then attach to mast cells in the nasal epithelium, causing the cells to rupture and release inflammatory mediators including histamine (Type 1 allergic response).
- An intense local inflammatory reaction ensues with oedema and secretion of mucus. The nose may now become sensitive to irritants in inspired air, so that the slightest stimulus will cause symptoms to recur.
- Allergic rhinitis primarily occurs in atopic individuals.
- Atopy is a general increased sensitivity to the production of Immunoglobulin E in response to small amounts of allergens-typically specific proteins.
- Atopic people may develop both rhinitis and asthma ('sneezles and wheezles') and they often have a strong family history of these disorders and of eczema.

❖ Clinical features:

- Diagnosis is clinical, you don't usually need X-rays or scans. The main symptoms are:

- Paroxysmal sneezing
- A feeling of nasal congestion.
- Nasal airflow obstruction.
- Rhinorrhea or a watery nasal discharge.
- Reduced or absent sense of smell (hyposmia or anosmia).
- Itchiness of the nose, eye palate and/or throat.

❖ Types: "old classification"

➤ 1- **Seasonal** Allergic rhinitis:

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

➤ 2- **Non-seasonal (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].

➤ **Occupational allergies:**

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

"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

-Non organic substances can induce inflammatory reaction and nonspecific irritants like:

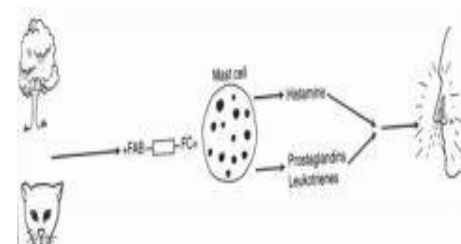
smoke and dust >> Vasoactive substances (the reaction is not IgE mediated but it's IgG).

-Physical factors can affect the mast cell like: Temperature change & alcohol.

-Atopy (atopic syndrome) : Characterized by a tendency to be “hyperallergic”. A person with atopy typically presents with one or more of the following: **eczema** (atopic dermatitis), **allergic rhinitis** (hay fever), or **allergic asthma**. Some patients with atopy display what is referred to as the “allergic triad” of symptoms, i.e. all three of the aforementioned conditions

→ 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.**



→ Diagnosis of AR:

- Detailed medical history. “when I get exposed to dust I have the symptoms”
- ENT examination.
- Other tests as appropriate: allergy tests, endoscopy, nasal smear, nasal swab, radiology, nasal airway assessment, olfaction, and blood tests.
- Eosinophils
- Skin tests (Antihistamine should be discontinued 3-6 days before test)
- Blood tests “e.g. radioallergosorbent test (RAST) to assess total Ig E level”

** Allergic rhinitis can be:

Ig E mediated (type 1 hypersensitivity) OR **non Ig E mediated**

- Ig E mediated: There is an antigen-antibody reaction.
- Non Ig E mediated: Like vasomotor rhinitis.

→ 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.

- **Clinical features:** - Nasal obstruction - Rhinorrhea (clear Watery) - Sneezing - Nasal irritation

→ Examination:

- **Allergic crease.**
- Nasal mucosa: **livid & pale.**
- The turbinates: **swollen.**
- Clear secretion: +++.
- Local ENT examination: allergic nasal mucosa appear **pale or bluish**, boggy with swelling and watery discharge. there may be polyp, structural (septal deviation, prominent turbinate).



→ Investigation: →

- | | | |
|-----------------------------------|--------------------------|-------------------------|
| • Skin prick testing | • Nasal Cytology | • Intracutaneous tests |
| • RAST (radioallergosorbent test) | • IgE | • Mucociliary clearance |
| • Typical history | • Rhinomanometry | • Rhinoscopy tests |
| • Patch tests | • Nasal provocation test | • 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.

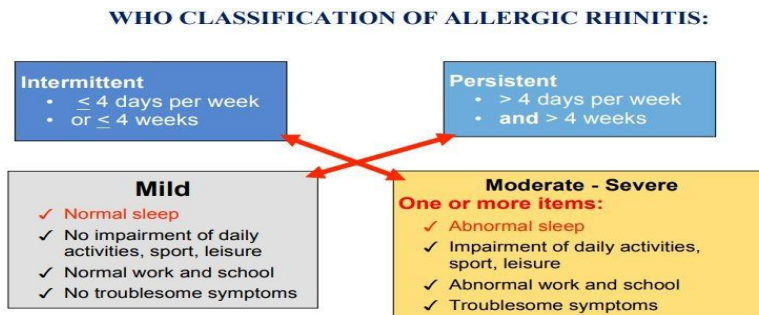
- **Avoidance of precipitating factors (Allergens)**
- **Antihistamine drugs** "Mainstay of treatment specially if the patient has other allergies like Asthma, they are preferred in acute settings because of their rapid onset of action"

Topical Steroid (Intranasal corticosteroids) "preferred in the long-run and good stabilizers"

- **Desensitization "immunotherapy":** used in case of failure of antihistamines and steroids. "now available in sublingual form"
- **Anti-cholinergics**

- Na cromoglycate
- Surgery “not for the allergy itself but for other symptoms resulting from it e.g. Polyp, hypertrophied turbinate etc”

→ WHO Classification of allergic rhinitis: 1) Mild 2) Moderate 3) Severe (433 team)



The same uniform classification of allergic rhinitis is proposed for: Rhinitis, Conjunctivitis, Asthma, Eczema/dermatitis, Urticaria, Food hypersensitivity, Drug hypersensitivity, Venom hypersensitivity, Anaphylaxis

Allergic Rhinitis	Non-Allergic Rhinitis
<ul style="list-style-type: none"> - Has a trigger - Patients reacting to something that they are not supposed to react to - They have allergic reaction 	<ul style="list-style-type: none"> - Hormonal or Irritant - <u>Irritant</u>: example: someone working in a flour factory → this is irritant not allergic! because he works with flour everyday he will be irritated by it. (we advise them to wear a mask) - <u>Hormonal</u>: mostly in females and teenagers - In pregnant ladies especially in first trimester and in primigravidas (the body adjusts after that); because of hormonal changes they get nasal congestion (it will resolve after giving birth)
They both have the same symptoms but different cause symptoms like : itching, sneezing, runny nose,,	
Treatment	
<ul style="list-style-type: none"> - #1 is Avoidance of trigger - Antihistamine for congestion - Sea salt wash - More advanced solutions for extreme symptoms: <ul style="list-style-type: none"> - sodium cromoglycate: mast cell stabilizer - surgery: doesn't change allergy (the patient will still have allergy) but it makes patients less symptomatic (e.g. not as much secretions as before) so surgery only helps ; it doesn't treat the problem - For patients with proven allergies immunotherapy (sublingual or subcutaneous) can be used → remove the allergy → desensitization. Patient takes it for a year or two weekly. 	

Non-Allergic Rhinitis

- Similar symptoms of allergic rhinitis, but in the absence of identifiable allergies with less itchiness and sneezing.
- **Subtypes:** Idiopathic Rhinitis, Occupational Rhinitis, Drug-induced Rhinitis, Hormone-Induced Rhinitis, Autonomic Rhinitis (Vasomotor), Atrophic Rhinitis, Systemic diseases causing rhinitis.
- Rx: Addressing the cause of possible.
- INCS (Intranasal Corticosteroid), antihistamines, oral decongestants, topical anticholinergic, mast cell stabilizers and turbinate reduction are options that can be considered in each case.

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
- Sometimes → 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
- Removal of adenoid
- Correction of septal deformities
- Turbinate surgery
- Sinus drainage

Pregnancy Rhinitis:

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

Rhinitis Medicamentosa:

- 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: not mentioned in doctor slides

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
- Nasal diphtheria & Nasal Tuberculosis
- Gumma due to stage III Syphilis
- Rhinolith & foreign body
- 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.

Vestibulitis and furunculosis

Furunculosis of nasal vestibulitis:

Acute **staphylococcal aureus infection** of hair follicle

- Vestibule: is the most anterior part of the nasal cavity that is lined by skin epithelium and has hair follicles.
- It is lined by skin epithelium "**squamous cell epithelium**" not respiratory epithelium, so it can be affected by skin diseases like dermatitis and furunculosis.
- Trauma from nose picking or plucking vibrissae (hair) is the usual predisposing factor.
- There will be small but **very painfull**, swelling, infection and sometimes fever.

Clinical features:

Pain-tenderness-indurated swelling in the vestibule

Treatment:

- include analgesia.
- warm compressors.
- Systemic antibiotics or topical depends if the patient is immune-compromised or extreme of age.
- I&D (Incision and drainage).

Rx depend on immunity & symptoms & age (extreme age) If mild symptoms might give topical, if severe might give systemic in top of topical.

Complication:

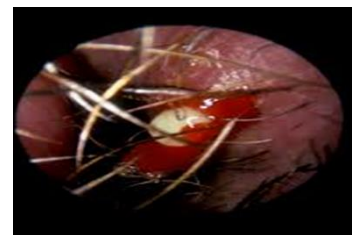
Because head and neck have a valveless venous system, so it can go ante grade or retrograde, so it may push infection.

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

Furunculosis: the same as vestibulitis, with pus.

Vestibulitis: more broad term than furunculosis, infection of skin and hair follicles.

Cellulites: skin infection without pus.



Nasal Vestibulitis

Vestibulitis:

- Diffuse dermatitis of the nasal vestibule, usually by **staphylococcal aureus infection**.
- Red, swollen, eroded and tender **skin** with crustations and scales.
- Rx: Local cleaning, local antibiotic-steroid ointments.



Furuncle	Vestibulitis
<ul style="list-style-type: none"> - حبة بالأنف صغيرة و تنرفز مرة - Very localized (around hair follicles) and very painful - Treatment: - Don't squeeze, Don't manipulate - Avoid nose picking (causes cross contamination) - Apply antibiotic like Fucidin, why? *imp this area is from the dangerous zone, so complications might happen like cavernous sinus thrombosis and blindness 	<ul style="list-style-type: none"> - Broader than furuncle - Like cellulitis but in the nose - Management is the same as furuncle + maybe you'll need oral antibiotics or IV antibiotics and admission (depends on the case)

Nasal polyps:

Dr said nasal polyps are just a description not diagnosis

❖ Defined as:

- simple oedematous hypertrophic nasal mucosa. Can be unilateral / bilateral.
- It is a pedunculated portion of oedematous mucosa of the nose

❖ Etiology:

- Allergy
- Inflammation "i.e. Infections"
- Neoplastic

❖ Classification:

- Simple nasal polyp
- Fungal polyp
- Malignant polyp

❖ Simple nasal polyp 'Also known as inflammatory polyp:'

- Ethmoidal polyp (**commonest sites**)
- Antrochoanal polyp (Antral)
- Antrochoanal polyp (present from the nose going to the nasopharynx).
- In general the ethmoidal and antrochoanal polyp are almost the same and have the same management

❖ Clinical features of Nasal polyps:

- Nasal obstruction – Unilateral / bilateral
- Anosmia
- Loss of taste
- Rhinorrhoea – watery / mucoid / mucopurulent
- Headache
- Broadening of nose (Frog face)

Ethmoidal polyp	Antrochoanal polyp
Seen in adults	Seen in children and adolescents
Allergy is the common cause	Infection is the common cause
Multiple (bunch of grapes)	Unilateral
	Arises from maxillary antrum
Seen easily on anterior rhinoscopy	Seen commonly in post nasal exam
X ray PNS may show hazy ethmoids and normal maxillary sinuses	X ray PNS shows hazy maxillary antrum
Mostly bilateral	Usually unilateral
Recurrence is common	Recurrence is uncommon
Polypectomy	Caldwell luc surgery in recurrent cases



Individual polyp “unilateral”	Multiple polyps
<p>seen in :</p> <ul style="list-style-type: none"> - AFS “Allergic fungal sinusitis” in early stages - Antrochoanal polyp. - Inverting Papilloma - Encephaloceles - Gliomas, hemangiomas, juvenile nasopharyngeal angiofibromas, rhabdomyosarcoma, lymphoma, neuroblastoma, sarcoma, chordoma 	<p>usually found in:</p> <ul style="list-style-type: none"> - Chronic sinusitis - “we divide it into 2 types based on presence of polyps” - Allergic rhinitis - Cystic fibrosis (CF) <p>(all of the above usually have bilateral involvement)</p> <ul style="list-style-type: none"> - Allergic fungal sinusitis (AFS) usually starts unilateral but in advanced cases it becomes bilateral.

Fungal polyp:

we divide the fungal polyp into invasive and noninvasive

● 5 Different types:

- Acute fulminant **invasive**
- Chronic invasive **invasive**
- Granulomatous invasive **invasive**
- Fungal ball **non invasive**
- Allergic fungal rhinosinusitis (AFRS) **non invasive**

❖ Acute fulminant:

- Sudden onset and usually present in **immunocompromised** patients leading to serious consequences.

❖ Chronic Invasive:

- **Invades** the basement membrane and go to the adjacent structures causing necrosis and ischemia.

❖ Fungal Ball:

- **Immunocompetent.**
- Fungal ball is tightly packed hyphae of aspergillus (common).
- Antifungal trt is not necessary.



Allergic fungal rhinosinusitis (AFRS):

also **Immunocompetent** and its IGE mediated AFRS most commonly seen in Saudi Arabia. Bent's criteria

- Type I hypersensitivity (demonstrable)
- Nasal polyposis
- **Heterodense mass lesion seen in CT scans and remodeling**
- Presence of eosinophilic mucin mixed with non invasive fungus
- + Fungal stain / culture

❖ Clinical features:

- Nasal obstruction – Unilateral / bilateral.
- Anosmia.
- Loss of taste.
- Rhinorrhoea – watery / mucoid / mucopurulent.
- Headache.
- Broadening of nose (Frog face).

❖ Examination:

- Smooth glossy grape-like multiple mass seen in anterior rhinoscopy.
- Insensitive on probing. Probe can be passed around the polyp (**when touched the patient will not feel**).
- Soft and mobile
- Polyp can be seen at the level of choana.
- Antrochoanal polyp can be seen exiting out of accessory ostium.

(possible SAQ)

What do you see in the photo?

-nasal polyp.

Give ddx?

-Simple nasal polyp.

-Allergic nasal polyp.

- Allergic fungal rhinosinusitis.

-Malignancy

-Inverted papilloma.

• Differential diagnosis:

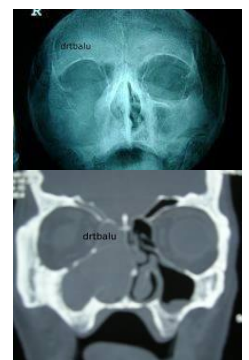
- Meningocele.
- Angiofibroma.
- **Squamous cell carcinoma** (squamous cell carcinoma is the most common malignancy in the nose).
- Enlarged turbinates.
- **Inverted papilloma** (benign tumor).

• Radiology:

- Heterogeneity, remodelling > **Allergic fungal**.
- No heterogeneity, expanding, unilateral > **Malignancy**.



Posterior rhinoscopy



★ **Treatment of Nasal polyp: “treat the underlying cause”**

-Medical Management:

- Topical and systemic steroids
- Normal saline irrigation
- Antibiotics (if acute)
- Antihistamine “if due to allergy”

-Surgery:

- Functional endoscopic sinus surgery (FESS) “We have to aerate the sinus and drain so that functional physiology of the sinuses is restored”
- Endoscopic polypectomy
- Caldwell Luc procedure

In general start with medical treatment, if failed > surgical.


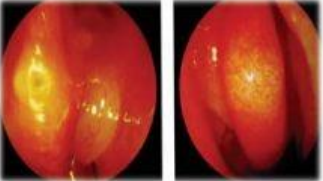
FESS risks (complications):

1. Bleeding
2. Synechiae formation
3. Orbital injury
4. Blindness
5. CSF leak
6. Nasolacrimal duct injury/epiphora
7. Diplopia
8. Orbital hematoma
9. Direct brain injury

430 team:

Nasal polyps: Not mentioned in male slides

- 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.
- Patients have miserable time and they respond well to Salicylate-free diet.

Clinical Feature:	examination:	Investigation	Medical treatment	Surgical Treatment
<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 : <ul style="list-style-type: none"> • CT scanning to exclude (Encephalocele) • Sweat test to exclude (Cystic Fibrosis) 	<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>Systemic steroids :Short reducing dose (it may lead to Avascular necrosis of the head of femur)</p>	<p>Nasal polypectomy(Partial or total ethmoidectomy) Postoperatively Topical steroids :- -Minimal time is 3 months</p> 

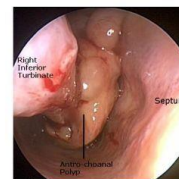


Antrochoanal polyp: “diagnosed on examination and imaging basis”

- Long pedicle unilateral solitary benign polypoidal lesions
- **Polyp originating in the maxillary sinus, protruding in the middle nasal meatus**
- Further posterior extension moves the polyp through the choana into the nasopharynx, and a very large lesion may appear as an oropharyngeal mass.
- Antrochoanal polyp can be seen exiting out of accessory ostium.
- 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



Posterior extension to the nasopharynx



Coronal section CT scan showing unilateral mass in the maxillary sinus



CT scan showing unilateral mass in the maxillary sinus "axial"

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 (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)

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