

# PHC

432 Team

15

## UPPER RESPIRATORY TRACT INFECTIONS



Done By:  
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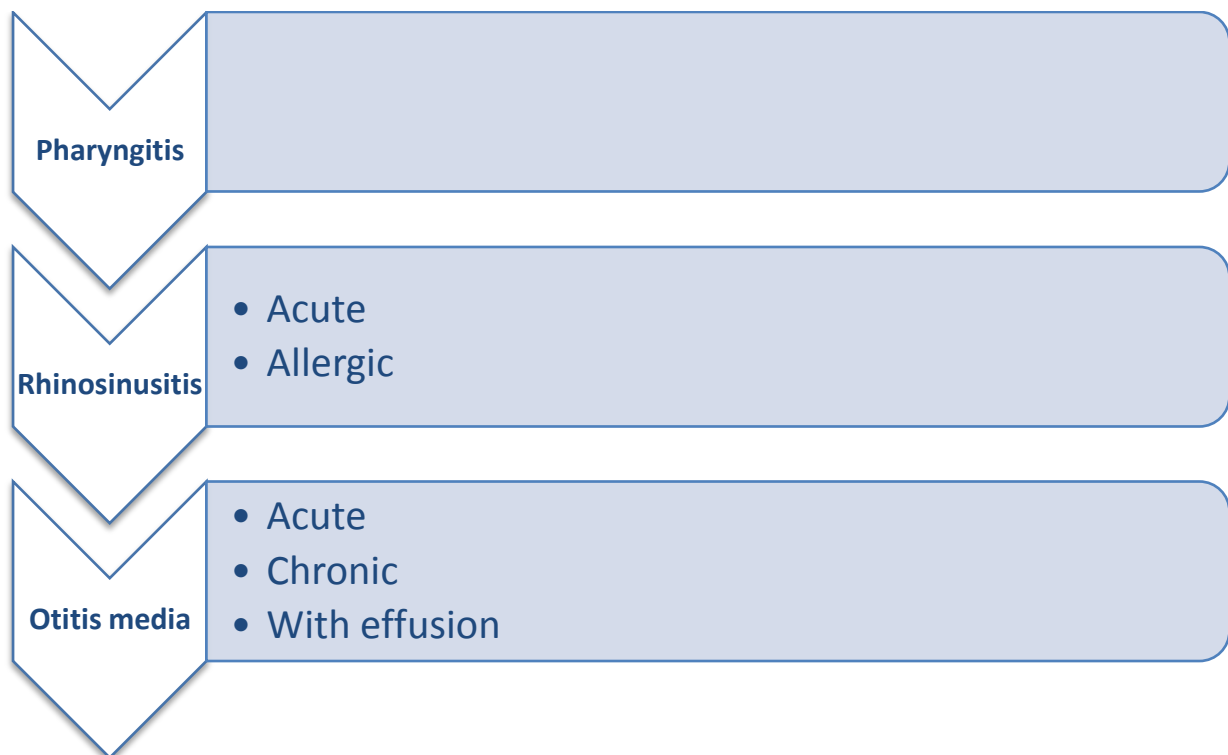
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# Objectives

- 1) How can we differentiate between viral and bacterial infections?
- 2) Sore throat (clinical features, differential diagnosis, complications, management)
- 3) Sinusitis including allergic rhinitis (Clinical features and management)
- 4) Otitis media in children (AOM and Secretory OM, Features, management)
- 5) How can we modify help seeking behavior of patients with flu illness?



## Pharyngitis (Sore throat)

### *Causes:*

#### 1. Viral (most common >50%)

- a) Rhinovirus, coronavirus and parainfluenza virus (causes of the common cold) are the most common (25%)
- b) Other viral causes are: Influenza virus, adenovirus, herpes simplex virus type 1, EBV (causes infectious mononucleosis, causes splenomegaly) and HSV.

#### 2. Bacterial:

- a) The most important and most common cause of bacterial pharyngitis is group A beta haemolytic streptococcus (GABHS) (5-20% in adults, 15-30% in children).
- b) There are other rare causes e.g. haemophilus influenzae, Neisseria gonorrhoeae and others.

### *Clinical Features* (not always present!)

- 1) Painful swallowing
- 2) Fever (more common in bacterial)
- 3) Chills (more common in bacterial)
- 4) Cough
- 5) Nausea, vomiting and abdominal pain
- 6) Headache
- 7) Erythema and edema of the pharynx, uvula and tonsils, with hypertrophy of the tonsils.
- 8) Gray-white membrane or exudates (more common in bacterial)
- 9) Petechiae on soft palate (in bacterial)
- 10) Scarletiform rash (in bacterial)
- 11) Swollen and tender anterior cervical lymph nodes (more common in bacterial).

## ***Differential diagnosis:***

- 1) Peritonsillar abscess (quinsy).
- 2) Kawasaki disease (children younger than 5).
- 3) Epiglottitis (if suspected **do not examine throat**, examination may lead to airway obstruction).
- 4) Diphtheria (adherent gray membrane over tonsils and pharynx)
- 5) Non infectious causes (GERD, acute thyroiditis, chronic cough, post nasal drip, irritation by tobacco smoke, alcohol or NG tube)
- 6) Tumor

## ***Diagnosis***

- a) Diagnostic tests are not used routinely.
- b) Rapid antigen detection test (RADT): detect the presence of GABHS antigen in throat swab in 10-15 minutes, >90% specificity and 59%-95% sensitivity (higher in newer kits).
- c) Throat culture: though it's more accurate, yet negative culture does not rule out the diagnosis of streptococcal infection

## ***Management:***

- 1) Reassure the patient that the illness is self limiting and rarely causes complications, educate patients about viral nature of most infections, and how antibiotics are not indicated.
- 2) Encourage adequate fluid intake to avoid dehydration.
- 3) Paracetamol or ibuprofen to relieve symptoms.
- 4) Majority of sore throats are caused by viruses hence they are self-limiting.

Antibiotics do not significantly relieve symptoms or reduce duration of illness in most patients and though complications of streptococcal infection are rare antibiotics are proved to have little benefit in preventing them:

a) Use Centor criteria to assess the need of antibiotics:

**Centor criteria is clinically based 4 points criteria:**

- i. Absence of cough
- ii. History of fever
- iii. Exudates on tonsils or pharynx
- iv. Tender anterior cervical lymphadenopathy.

**Interpretation:**

- (0-1) do not prescribe.
- (2) Consider RAST or culture.
- (3-4) immediate prescription

b) Antibiotics recommended (**Penicillin**, if allergic use **Macrolides**)  
however **Ampicillin and Amoxicillin are not recommended as they cause rash in infectious mononucleosis.**

5. Safety netting (if patient do not require immediate prescription, use safety netting i.e. “if your symptom persist for >3 days, or it get worse, visit for antibiotic prescription”)

***Group A B-hemolytic streptococcus (GABHS) infection complications:***

1. Suppurative complications: parapharyngeal, retropharyngeal and peritonsillar abscess, sinusitis, cervical lymphadenitis, otitis media, and mastoiditis.
2. Non suppurative complications: Acute rheumatic fever and Poststreptococcal glomerulonephritis.

## Rhinosinusitis

### Definition

- Acute rhinosinusitis (ARS): < 4 weeks.
- Subacute rhinosinusitis: 4 to 12 weeks.
- Chronic rhinosinusitis: ≥ 12 weeks.
- Recurrent acute rhinosinusitis: four or more episodes of ARS per year.

### Acute rhinosinusitis:

#### Causes:

**Table .2/Viral VS. Bacterial rhinosinusitis:**

	Viral	Bacterial
Nasal discharge	Bilateral, clear	Unilateral predominance, purulent
Pain	Bilateral	Unilateral predominance
Fever	<38 c° (low grade fever)	>38c° (high grade fever)
Course	Mild symptoms	Acute deterioration After mild symptomc
Period	Resolves in 7 to 10 days	May persist beyond 7 days
Organisms	1.rhinovirus 2.influenza virus 3.parainfluenza virus	1.Strept. pneumoniae 2.Haemophilus influenzae.

### Clinical features

- 1) Nasal congestion and obstruction
- 2) Purulent nasal discharge
- 3) Sinus pain ( mostly maxillary and could mimic pain of dental caries)
- 4) Headache or facial pain that worsens with percussion or bending head down
- 5) Hyposmia or anosmia (loss of smell)
- 6) Fever
- 7) Cough
- 8) Ear pressure or fullness (mostly in children, due to Eustachian tube blokage)

## Diagnosis

The diagnosis of acute rhinosinusitis is based on clinical signs and symptoms thus physical examination and diagnostic testing (culture, endoscopy and radiology) have limited role in the diagnosis unless signs suggesting complicated disease appeared.

## Differential diagnosis

- 1) Common cold
- 2) Allergic rhinitis
- 3) Vasomotor rhinitis
- 4) Tension headache, migraine and cluster headache

## Management

- 1) Indications for urgent admission
  - i) Signs of sever systemic infection.
  - ii) Signs of orbital involvement: Displaced globe, diplopia, ophthalmoplegia, or reduced visual acuity (orbital cellulitis)
  - iii) Signs of intracranial involvement: Severe frontal headache, frontal swelling, altered mental status, symptoms or signs of meningitis, or focal neurological signs (Intracranial involvement).
- 2) Measurements of treatment
  - a. Reassurance: reassure the patient that the illness is self limiting, taking 2.5 weeks on average, educate patients about viral nature of most infections, and how antibiotics are usually not indicated!, encourage adequate fluid intake to avoid dehydration.

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Treatments that are not recommended include:

1. Steam inhalation
2. Oral steroids
3. Antihistamine
4. Complementary and alternative medicine (as the benefits have not been proven).

Safety netting: if patient do not require immediate prescription, advise him/her to visit for antibiotic prescription if symptom persist beyond 3 days, or it get worse.

b. Symptomatic relief:

- i. Relieve pain and headache with warm packs and/or giving (Paracetamol or ibuprofen)
- ii. Treat nasal congestion with: normal saline irrigation or/and intranasal decongestant (Pseudoephedrine or Oxymetazoline) and emphasize on limited usage <7days.
- iii. For prolonged or severe symptoms consider prescribing an intranasal corticosteroid.
- iv. Avoid prescribing antihistamines unless there is co-existing allergic rhinitis.

c. Antibiotics: if symptoms suggestive of bacterial cause (see above)

- i. 1st line: amoxicillin, if allergic doxycycline or macrolides (Clarithromycin and erythromycin)
- ii. 2nd line: amoxicillin/clavulanic acid, if allergic azithromycin

d. Safety netting.

### **Box .1**

#### **Rhinitis medicamentosa (RM)**

This condition is due to the prolonged use of nasal decongestants leading to medication tolerance, whereas the use of nasal decongestants become of a very little effect on the patient making him feels the need to increase the dose to get the desired effect.

### **Allergic rhinitis**

- 1) Allergic rhinitis is associated with the development of allergic conjunctivitis, eczema, and asthma (atopy).
- 2) 10-30% of adults, and up to 40% in children worldwide.
- 3) Classification: e.g. (intermittent moderate-severe allergic rhinitis) or (intermittent mild ...)
- 4) Intermittent (<4 days per week or <4 weeks), persistent (>4 days per week or >4 weeks)
- 5) Severity of symptoms (mild, moderate-severe) by its affect to quality of life



### ***Common allergens:***

House dust mite, pollens, pets' hair or occupational (like: latex gloves, flour, and wood dust).

### ***Clinical features***

- Sneezing
- Itching (pathognomonic)
- Watery rhinorrhea
- Nasal obstruction
- Associated symptoms (fatigue, poor sleep, snoring, headache, and symptoms of atopy)
- Edematous and pale nasal mucosa on anterior rhinoscopy.

### ***Differential diagnosis***

- Infective Rhinitis (acute onset, cough, fever, lymphadenopathy, and purulent discharge)
- Irritant rhinitis (with exercise, humidity, temperature change, or chemical exposure)
- Other non-allergic causes of rhinitis:
  - Vasomotor rhinitis
  - Hormonal rhinitis
  - Drug induces rhinitis (ACEi, Beta blockers, Aspirin chlorpromazine, NSAIDs, and cocaine) or rhinitis medicamentosa (caused by topical decongestants).

### ***Diagnosis is made clinically if:***

- Infective and irritant rhinitis are unlikely (see above).
- Personal or family history of atopy.
- Associated with exposure to known allergen.
- Nasal itching.
- If unclear Refer to immunologist for skin prick test and send blood for serum total and specific IgE, if it is negative consider other non- allergic causes.

## Management

- Allergens avoidance.
- Pharmacotherapy is complicated but there is some **important facts**:
  - **Antihistamines** are used for occasional symptoms “as required”.
  - **Intranasal corticosteroids** are used as maintenance therapy regardless the symptoms; use maximal dose then taper to the lowest effective dose
  - Starting on **intranasal corticosteroid** is preferable, intranasal antihistamine may be added.
  - **Antihistamines are more effective on itching** and sneezing, not much on congestion.
  - **Oral antihistamine are preferable over intranasal** when conjunctivitis is present.
  - Take patient preferences into consideration, oral or intranasal, corticosteroids or not.
  - Other measurements for refractive cases are oral corticosteroid and montelukast.

## Otitis Media:

### Types

- 1) Acute otitis media (AOM).
- 2) Otitis media with effusion (OME).
- 3) Chronic suppurative otitis media.
- 4) Adhesive otitis media.

### Investigations

1. Otoscope
2. Tympanometry
3. Pure Tone Audiometry

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Supine bottle feeding results in drainage of some of the feeding contents into the Eustachian tube reaching the middle ear and causing infection

### Risk factors

- Passive tobacco smoke
- Group daycare attendance
- Seasonality
- Supine bottle feeding

**Table .1/ Symptoms of different types of Otitis Media:**

	AOM	OME	CSOM
	1.Otalgia,	1.Otalgia,	1. Otorrhea,
	2.Otorrhea,	2.hearing loss,	2. hearing loss,
	3.Fever,	3.tinnitus,	3. tinnitus
	4.vomiting,	4.vertigo	4. Otorrhea,

### Acute otitis media (AOM)

#### Management

- ❖ Treat pain and fever
- ❖ No Abx (or delayed Abx if it persists >4days)
- ❖ < 3 months children could need immediate Abx, admission or referral to a specialist.
- ❖ Referral or admission?

### Otitis media with effusion (OME)

#### Management

- 1) It is a self-limiting illness and 90% of children will have complete resolution within 1 year, so reassure the parents.
- 2) There is no proven benefit from treatment with any medications or any complementary or alternative therapies.

- 3) For acute cases, a period of active observation over 6–12 weeks is appropriate, as spontaneous resolution is common (during this period, do not prescribe antibiotics, steroids, antihistamines, decongestants, or mucolytics).
- 4) If signs and symptoms persist, refer the child for a hearing test or/and to the specialist.
- 5) Children with **Down's syndrome or cleft palate who are suspected to have OME, require immediate referral** for specialist assessment.

### ***Chronic suppurative otitis media***

#### ***Management***

1. Admit people with signs of infection beyond the ear, (e.g. postauricular swelling or tenderness, headache, facial paralysis, or vertigo).
2. Refer to ENT specialist for the treatment and follow up.

## Summary

- Rhinovirus, coronavirus and parainfluenza virus (causes of the common cold) are the most common cause of viral pharyngitis (25%).
- Causes of Acute rhinosinusitis:

**Table .2/Viral VS. Bacterial rhinosinusitis:**

	Viral	Bacterial
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	3.Fever,	3.tinnitus,	3. tinnitus
	4.vomiting,	4.vertigo	4. Otorrhea,

## Questions

1) The most important step in managing allergic rhinitis:

- a) Avoidance of allergy
- b) Usage for antibiotic for long time
- c) Drinking fresh orange juice
- d) Topical corticosteroid

2) A 3-year-old child diagnosed with acute otitis media, what is the drug of choice to treat him:

- a) Amoxicillin
- b) Cephalosporin
- c) Macrolides
- d) Doxycycline

3) Ahmad is 30 year old gentleman complaining of headache increase on leaning forward during praying and mucopurulent post nasal discharge, for the last 2 weeks. On examination, there was nasal discharge in both nasal fossae. What is the most likely?

- a) Acute Bacterial Rhinosinusitis .
- b) Acute Viral Rhinosinusitis
- c) Common Cold .
- d) Chronic Bacterial Rhino Sinusitis

4) A patient came in with sore throat, cough and low grade fever and muscle stiffness. After the doctor diagnosed her with her flu and prescribed her the treatment the patient asked the doctor what is the most common cause of sore throat.

The doctor answered:

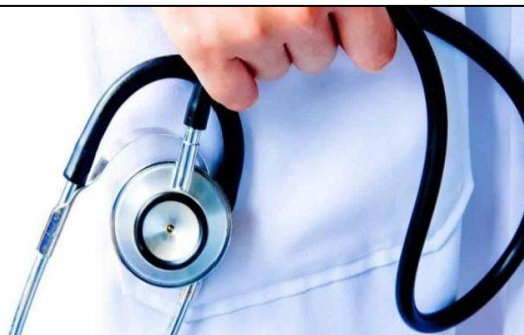
- a) Fungal
- b) Bacterial
- c) Viral
- d) Allergy

5) Mother brought her child to the clinic complaining of mild earache mild deafness and there is no fever he was diagnosed with acute otitis media. Which stage of AOM this child has?

- a) tubal occlusion
- b) pre-suppurative
- c) suppurative

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#### **Answers:**

- 1st Questions:A
- 2nd Questions:A
- 3rd Questions:A
- 4th Questions:C
- 5th Questions:A