Microbiology TEAM 432

Lecture 1

Upper Respiratory Tract Infection (URTI)

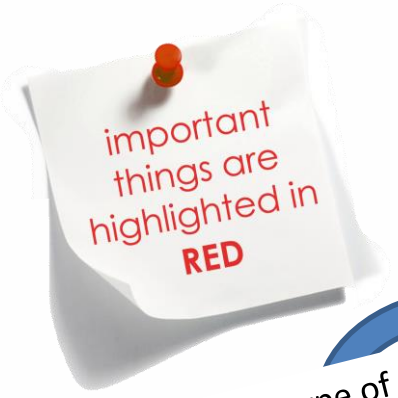
Objectives

1. To learn the epidemiology and various clinical presentation of URT
2. To identify the common etiological agents causing these syndromes
3. To study the laboratory diagnosis of these syndromes
4. To determine the antibiotic of choice for treatment

Red: very important , **green**: additional info by the Doctor

Done by: Abdullah Alanazi

Designed by: Fahad Al-subaie



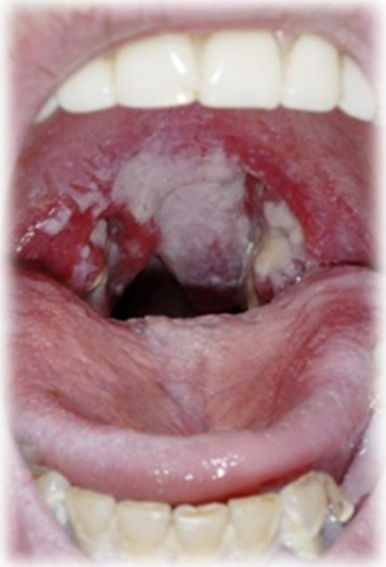
Mind map
(URTI)

One type of Pharyngitis is

- **Pharyngitis** — Viral (70%) , Bacterial (30%)
- **diphtheria** — diphtheriae Corynebacterium
- **Epiglottitis** — H.influenzae
- **Pertussis** — Bordetella pertussis lymphocytosis
- **otitis** — S. pneumoniae , H. Influenzae
- **sinusitis** — S.Pneumoniae , H.Influenza

Pharyngitis

- **Common at late fall, winter, early spring**
- **Affects children (5 to 15 years)**
- **<u>Features:</u> erythema, edema, and/or exudates**



Etiology:

1. Mostly caused by **Viral infection** (70%)

   E.g. Enterovirus, HSV, EBV, HIV, Respiratory viruses

2. Bacterial infection (30%)

   E.g. Group-A β-hemolytic Streptococcus (**<u>most common</u>**)

   and Corynebacterium diphtheriae could also cause pharyngitis (next slide)

- Very hard to differentiate between Viral/Bacterial infection

Treatment: Penicillin

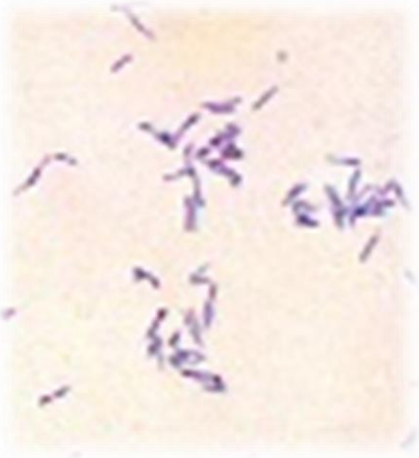
Corynebacterium diphtheriae

- Very serious toxin mediated disease and one of the most common causes of death in unvaccinated children (1-5yrs)
- **Caused by:** Corynebacterium
- **Features**: rapid progression tightly adhering gray membrane in the throat
- **Diagnosis:**

1. Culture with Tinsdale media

2. ELIK's Test for confirmation (whether it has toxins or not)

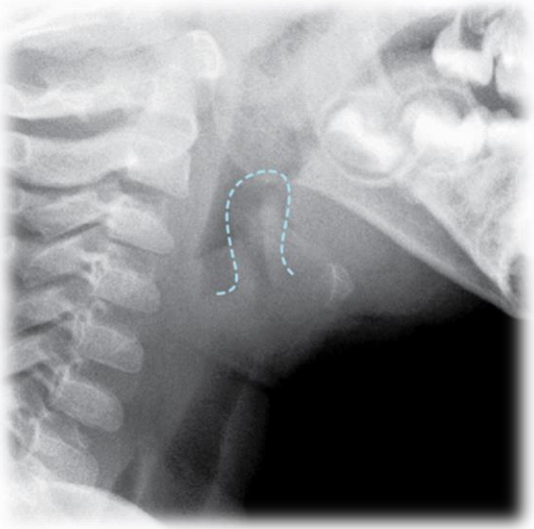
- **Treatment:** Penicillin or erythromycin



Epiglottitis

- **Usually young unimmunized children presented with dysphasia, drooling, and distress**
- **Etiology:** H.influenzae **Type b is the** most common **cause**

  (it could be caused by viral or fungal infections, too)
- Do not ever never try to touch the epiglottis, the patient will die immediately
- Neck X-rays show a Thump sign
- **Treatment:** Ceftriaxone



Pertussis (whooping cough)

- **Caused by:** Bordetella pertussis (GNB)

This bacteria produces Pertussis toxin and has filamentous hemagglutinin and pertactin in its structure.

- The disease has three stages after the incubationn period:

Catarrhal Stage ➔ Paroxysmal Stage ➔ Convalescent Stage

- **Features:** Leukocytosis with lymphocyte predominance
- **Diagnosis**: Nasopharyngeal (NP) swabs

The swab is cultured in a special media called Charcoal-horse blood T media

- **Treatment:** erythromycin and prevention vaccination

Acute otitis media

- **Most commonly caused by** S. pneumoniae and H. Influenzae but could also be viral or fungal infections.
- **Diagnosis:** Tympanocentesis test
- **Complication:** mastoiditis , meningitis
- **Treatment:** Amoxicillin or AMC
- If it turns to mastoiditis, treatment shouldn't be less than2 weeks

Bacterial sinusitis

Acute sinusitis

❖**Etiology:**

1.Bacteria (most common cause) e.g.
S.pneumoniae and H.Infuenza

2. Viral infection –> lead to secretions &drainage

❖ **Diagnosis :** X-rays CT/MRI

❖ **Symptoms:** Fever, headache symptomatic drugs (NSAIDS , Paracetamol)

❖ **Treatmen:** Quinolones or Ceftriaxone

❖ **Duration:** For 1-2 weeks

chronic sinusitis

❖**Etiology:**

Same as acute sinusitis in addition to oral anaerobes. Fungal infections are the most serious.

❖ **Diagnosis :** X-rays CT/MRI but less useful

❖ **Symptoms:** Less local symptoms, Mimic allergic rhinitis

❖**Treatmen:** Quinolones or Ceftriaxone

❖**Duration:** For 2-4 weeks

Additional information

*Bacterial and viral acute sinusitis are difficult to distinguish. However, if symptoms last less than 10 days, it is generally considered viral sinusitis. When symptoms last more than 10 days, it is considered bacterial sinusitis. Usually 30% to 50% of cases are bacterial.[citation needed]Hospital acquired acute sinusitis can be confirmed by performing a CT scan of the sinuses

Disease	Epidemiology	organism	Symptoms	Diagnosis	Treatment
Pharyngitis (Sore throat)	5-15Yrs	Viral is the most common i.e Enterovirus, HSV, EBV, HIV, Respiratory viruses Bacterial: Neisseria gonorrhoeae & Corynebacterium diphtheriae	Tender Fever edema Erythema No symptoms viral	Throat swab	Penicillin
Corynebacterium diphtheriae	unvaccinated children 1-5yrs	Corynebacterium diphtheriae	gray membrane in the throat	Tinsdale media ELIK's Test	Penicillin OR Erythomycin
Epiglottitis	unimmunized children	H.influenzae Type b S.pneumonae	dysphasia, drooling, and distress	X-ray (Thumb sign)	Ceftriaxone
Pertussis (whooping cough)	Children	Bordetella pertussis (GNB)	Whooping cough fever	Lymphocytosis&Nasop haryngeal (NP) swabs	Erythromycin
Acute otitis media	Any age	S. pneumoniae H. influenzae GAS Moraxella catarrhalis	Inflamed Eustachian tube	Complication mastoiditis, meningitis	Amoxicillin or AMC
Bacterial sinusitis Acute / Chronic	Any age	S.pneumoniae H. influenza M.catarrhalis	Facial pain Headache	CT/MRI scan	Quinolones Or Ceftriaxone

Pharyngitis, diphtheria and pertussis can prevented by vaccin

By : Hamad ALBraidi

last 3 slides doctor did not go through them .. So you have to read them briefly

Thank You !

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Questions

What is the most common organism that can cause pharyngitis?

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A child admitted to the hospital with saliva drooling and dyspnea. After taking "neck X-Ray" we found that there is a thump sign. what is the disease?

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What is the treatment of whooping cough?

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