Upper Respiratory Tract Infections
Upper Respiratory Tract Infections

- Acute tonsillitispharyngitis
- Acute otitis media
- Acute sinusitis
- Common cold
- Acute laryngitis
- Otitis externa
- Mastoiditis
- Acute apiglottis
Pharyngitis - Tonsilitis
• Pharyngitis
  – predominantly inflammation of the oropharynx, but not the tonsils.

• Tonsillitis
  – when the tonsils are particularly affected.
Symptoms

- Sore throat
- Pain on swallowing
- Fever
- Headache
- Malaise
- Hoarseness if laryngeal involvement
Signs

- Redness of the pharynx and tonsils
- Presence of exudate
- Enlarged tonsils
- Swollen tender neck glands.
- Note that a streptococcal sore throat is impossible to diagnose on clinical grounds alone.
Tonsilitis-pharyngitis

➢ Viruses
  • Epstein-Barr virus
  • Adenovirus
  • Influenza A, B
  • Coxsackie A
  • Parainfluenzae
  • Rhinovirus, Coronavirus
  • Herpes simplex type
  • Parainfluenza
  • Cytomegalovirus
  • HIV

➢ Bacteria
  – S. pyogenes
  – C. diphteriae
  – N. gonorrhoeae
افتراق کدام میکرووایرگانیسم‌ها اهمیت دارد؟
Causative organisms

- < 3 years
  - \(\approx 100\%\) viral
- 5-15 years
  - 15-30\% GABHS
- Adult
  - 10\% GABHS
Signs/symptoms of Streptococcal pharyngitis

- Sore throat
- Anterior cervical LAP
- Fever > 38 °C
- Difficulty in swallowing
- Headache, fatigue
- Muscle pain
- Nausea, vomiting

- Tonsillar hyperemia / exudates
- Soft palate petechia
- Absence of coughing
- Absence of nose drip
- Absence of hoarseness
Viral tonsillitis/pharyngitis

- Having additional rhinitis, hoarseness, conjunctivitis and cough
- Pharyngitis is accompanied by conjunctivitis in adenovirus infections
- Oral vesicles, ulcers point to viruses
### Table 54-3: Modified Centor Score and Culture Management Approach for Pharyngitis

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature &gt; 38°C</td>
<td>1</td>
</tr>
<tr>
<td>Absence of cough</td>
<td>1</td>
</tr>
<tr>
<td>Swollen, tender anterior cervical nodes</td>
<td>1</td>
</tr>
<tr>
<td>Tonsillar swelling or exudate</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3-14 yr</td>
<td>1</td>
</tr>
<tr>
<td>15-44 yr</td>
<td>0</td>
</tr>
<tr>
<td>45 yr or older</td>
<td>-1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Score</th>
<th>Risk of Streptococcal Infection</th>
<th>Suggested Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤0</td>
<td>1%-2.5%</td>
<td>No further testing or antibiotics</td>
</tr>
<tr>
<td>1</td>
<td>5%-10%</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>11%-17%</td>
<td>Culture all: Antibiotics only for positive culture results</td>
</tr>
<tr>
<td>3</td>
<td>28%-35%</td>
<td></td>
</tr>
<tr>
<td>≥4</td>
<td>51%-53%</td>
<td>Treat empirically with antibiotics and/or perform culture</td>
</tr>
</tbody>
</table>

Diphtheria - notice the pseudomembrane in the posterior pharynx. It can become very large and may obstruct the airway.
Infectious Mononucleosis Symptoms

- Central Headache
- Tonsils Swelling
- White Patches
- Lymph Nodes Swelling
- Throat Redness
- Sore Throat
- Psychological Lethargy
- Loss of Appetite
- Systemic Fever & Chills
- Aches
- General Fatigue
- Respiratory Coughing
- Spleen Enlargement
- Gastric Nausea Vomiting

Mononucleosis is caused by the Epstein-Barr virus, a member of the herpes virus family. The peak incidence of the illness occurs during adolescence and early adult life. Typically, in children, the initial symptoms of mono occur about 10 days after exposure.
Figure 2 - Primary infection of HSV-1 affecting the gingival, tongue and skin
Throat Culture

- Pathogens looked for
  - Group A beta hemolytic streptococci
  - C. diphteriae (rare)
  - N. gonorrhoeae (rare)

- If GABHS do we need antibiogram?
  - Is there resistance to penicillin?
Acute Otitis Media

- 85% of children up to 3 years experience at least one,
- 50% of children up to 3 years experience at least two attacks
- AOM is usually self-limited. Rarely benefits from antibiotics.
- 81% undergo spontaneous resolution.
AOM causes

- S. pneumoniae 30%
- H. İnfluenzae 20%
- M. Catarrhalis 15%
- S. pyogenes 3%
- S. aureus 2%
- No growth 10-30%
- Chronic otitis media: P. aeruginosa, S. aureus, anaerobic bacteria
AOM - Etiology

1) Streptococcus pneumoniae (gram + cocci): 40 - 50%
2) Haemophilus influenzae (gram - coccobacilli): 30 - 40%
3) Moraxella catarrhalis (gram - cocci): 10 - 15%
4) Group A streptococcus (gram + cocci): rare
5) Staphylococcus aureus (gram + cocci): rare
6) Anaerobes: rare
7) Viral infection: Less than 10%

Penicillin-resistant Streptococcus pneumoniae is the most common cause of recurrent/persistent otitis media.
AOM - Risk factors

1) Age (6-24 mos)
2) Cleft palate / Down syndrome/ Craniofacial malformations
3) Ethnicity (Native American, Alaskan, Canadian, Inuit)
4) Pacifier use
5) Smoking in the home
6) Attending daycare
7) Male
8) Allergic rhinitis
9) Viral upper respiratory tract infections?/ Season
10) Breastfeeding (at least 3 mos)= protective
AOM - Symptoms

- Otalgia
- Fever
- Irritability
- Vomiting
- Diarrhea
- Poor feeding
- Often associated with cough and rhinitis
Signs

- Otoscopic findings
  - Tympanic membrane erythema
  - Inflammation
  - Bulging
  - Effusion

- Hearing loss
AOM - Diagnosis

Clinical diagnosis which includes….

1) Acute onset of symptoms
2) Middle ear effusion; bulging TM, decreased mobility of TM, air-fluid level
3) Middle ear inflammation; erythema of TM or otalgia affecting sleep or normal activity
AOM – When to refer?

Single episode AOM

- Complications of AOM
- Failure of antibiotic treatment with persistent severe signs (high fever, severe pain)…diagnostic tympanocentesis.
- Perforation with persistent otorrhea
AOM – When to refer?

Recurrent infections

- More than 4 documented infections in 1 year or more than 3 in 6 months.
- Child with co-existing illness for which surgical treatment may be more beneficial than repeated Abx therapy (immune deficiency, cystic fibrosis, sickle cell anemia)
- Multi-resistant bacteria
- Antibiotic allergies
AOM – When to refer?

1) Suspicion of hearing loss or history of language delay
2) Persistent more than 3-4 months
3) Persistent TM retraction or atelectasis
4) All children with cleft palate, Down syndrome or craniofacial malformations (earlier than later)
Sinusitis
Ethiologies

Acute sinusitis
- Str. pneumoniae %41
- H. influenzae %35
- M. catarrhalis %8
- Others %16
  - Strep. pyogenes
  - S. aureus
  - Rhinovirus
  - Parainfluenzae
  - Veilonella, peptokoccus

Chronic sinusitis
- Anaerob bakteria:
  - Bactroides, Fusobacterium
- S. aureus
- Strep. pyogenes
- Str. pneumoniae
- Gram (-) bakteria
- Fungi
Acute Sinusitis

- Paranasal sinuses:
  - Frontal
  - Ethmoid
  - Maxillary
  - Sphenoid
- Most common during childhood
  - Maxillary
  - Ethmoid
- After age 10
  - Frontal
Predisposition to Sinusitis

- Anatomical: septal deviation,
- Mukociliary functions: cystic fibrosis, immotile cilia synd.
- Systemic dis., immune deficiency.: DM, AIDS, CRF
- Allergy: Nasal poliposis, asthma
- Neoplasia
- Environmental: smoking, air pollution, trauma...
Acute Rhinosinusitis

- Most important: Headache and postnasal dripping
- Face congestion
- Fever, fatigue, headache increased by leaning forward
- Nose obstruction
- Nose dripping
- Purulent secretions (rhinoscopy)
- Sensitivity over the sinuses
- Halitosis
Acute rhinosinusitis

Rhinitis

- Increased symptoms after 5 days
- Symptoms lasting $> 10$ days
- Decreasing viral symptoms, nasal secretion becoming more purulent

are indicative for acute rhinosinusitis
Diagnosis

- Direct x-ray
  - Diffuse opacification
  - Mucosal thickening >4 mm
  - air-fluid level
- Sinus aspiration
  - Rarely performed
- Nasal endoskopy
- Tomography
  - More sensitive compared with direct x-ray
  - Indicated before surgery
Common Cold

- Adults
  Rhinovirus
- Children
  Parainfluenzae and RSV
Common Cold

- Fatigue
- Feeling cold, shuddering
- Nose burning, obstruction, running
- Sneezing
- Fever
Influenza (flu)

- Causes epidemics and pandemics
- Highly contagious
- Viral infection.
Cause

- 80% Influenzae virus
- Parainfluenza %2-9
- Rhinovirus %3
- Adenovirus %4
Influenza

• Sudden onset after 12-24 hours incubation
• General weakness and fatigue
• Feeling cold, shivering, temp. Up to 39-40°C
• No sore throat or running nose
• Severe back, muscle and joint pain
Laryngitis