Rhinosinusitis

Classify Rhinosinusitits according to etiology?

Infectious:

Viral– Bacterial – Fungal

Non-infectious:

Allergic rhinitis – Nasal Obstruction – Primary ciliary dyskinesia – Cystic Fibrosis

Classify infectious Rhinosinusitits according to etiology?

Viral : Influneza & Common Cold

Bacterial: Streptococcus pneumonia, Haemophilus influenza

Fungal: Aspergillus, Curvularia

How many types of viruses can cause Influenza?

Influenza A, B and C

How many types of viruses can cause Influenza?

Orthomyxoviridae

What are other viruses' families that can cause common cold?

Rhinoviruses, Coronaviruses, Adenoviruses, Human respiratory syncytial virus(in adults), Parainfluenza viruses

When should you suspect & test for MERS-CoV for someone with acute Rhinosinusitits?

- a. History of exposure to a confirmed or suspected MERS CoV in the 14 days prior to onset of symptoms
- b. History of contact with camels or camel products in the 14 days prior to onset of symptoms
- c. Unexplained acute febrile (≥38°C) illness, AND body aches, headache, diarrhea, or nausea/vomiting, with or without respiratory symptoms, AND leucopenia (WBC).

Compare between the 3 influenza viruses types in terms of the following: causing epidemics, & antigenic stability.

- Influenza type A is antigenically highly variable and is responsible for most cases of epidemic influenza.
- Influenza type B may exhibit antigenic changes and sometimes causes epidemics.
- Influenza type C is antigenically stable and causes only mild illness in immunocompetent individuals, No epidemic. Not in the vaccine (usually no fever)

How to differentiate between bacterial & viral rhinosinusitis?

(any of 3)

- Onset with persistent symptoms or signs compatible with acute rhinosinusitis, lasting for ≥10 days without any evidence of clinical improvement;
- Onset with severe symptoms or signs of high fever (≥39_C [102_F]) and purulent nasal discharge or facial pain lasting for at least 3–4 consecutive days at the beginning of illness

; or

- Onset with worsening symptoms or signs characterized by the new onset of fever, headache, or increase in nasal discharge following a typical viral upper respiratory infection (URTI) that lasted 5–6 days and were initially improving (‘‘double sickening’’).

How many viral Rhinosinusitis are complicated by bacterial infection?

- Only about 0.5 to 2.0% of VRS episodes are complicated by bacterial infection.

How does influenza spread?

- Person to Person, Contact with contaminated items, Droplet infection(Most common).

How to differentiate between common cold and influenza?

1- Different viruses, 2- Flu worse than common cold and can have serious associated complication (pneumonia, bacterial infection)

The typical incubation period for influenza is 1—4 days (average: 2 days)

When do we call bacterial rhinosinusitis acute, sub-acute, or chronic?

Acute<4weeks. Subacute 4weeks to 12 weeks. Chronic>12 weeks. Recurrent acute: 2-4 times per year.

What are the diagnostic tests for influenza?

Rapid Influenza Diagnostic tests: quick results, antigen detection. But negative results doesn't exclude diagnosis of influenza

PT-PCR & VIRAL CULTURE: More accurate but takes time. Began treatment should not wait for results

Rule of imaging in acute rhinosinusitis?

If you diagnosed patient through History no need for imaging, except if there is a complication(orbital, intracranial or soft tissue involvement) or alternative diagnosis(malignancy)

Or if the patient has factors that could predispose to complication (diabetes, immune-compromised state, or history of facial trauma or surgery).

How to manage viral and bacterial rhinosinusitis symptomatically?

- Symptomatic relief of VRS Clinicians may recommend analgesics, topical intranasal steroids, and/or nasal saline irrigation for symptomatic relief of VRS and ABRS.

Besides symptomatic management, how would you initially approach a bacterial

rhinosinusitis?

Antibiotics for 7 days (Amoxicillin with or without clavulanate is the first line)

Or Reassurance (but you have to follow-up the patient)

When we consider the treatment for acute bacterial rhinosinusitis a failure?

First reassure the patient, then confirm the diagnosis of ABRS after that change antibiotics

Who are the candidates for antiviral therapy?

Child younger than 2 years. Adult aged 65 and older. Immunocomprimzed patient. Pregnant or Postpartum (within 2 weeks). Person younger than 19 and receiving lifelong aspirin. Obese (BMI > 40) and Resident of nursing home.

What is the preferred antiviral agent for pregnant women?

Oral oseltamivir

How to prevent influenza?

Vaccination is the best way to primarily prevent influenza

Good Health Habits(e.g. Avoid close contact with sick patient)

The influenza vaccine is recommended for whom?

All persons aged 6 months and older

What is the frequency of influenza vaccination?

- Yearly.

How many doses of influenza vaccine you give to the child when you immunize him for the first time?

From 6 months to 8 years two doses. First does as soon as possible the second dose after 28 days (if the child needs it give it early as possible)

How many strains does the influenza vaccine contain?

3-4 strains

When should the influenza vaccine be offered?

2 weeks before flu begins spreading in your community

Which food allergy you should ask bout before giving influenza vaccine?

Egg

What are the ACIP recommendations regarding persons with egg allergy and influenza vaccination?

If person develop hives after the vaccine, he should receive any recommended vaccine

If person developed life threating event after vaccine he should receive the cell culture–based or recombinant influenza vaccines

What are the contraindications to the influenza vaccine?

Infant younger than 6 months.

People who have life threating event

People who have a severe allergy to a component of the vaccine

Allergic rhinitis

Definition:

Disease caused by an IgE-mediated inflammatory response of the nasal mucous membranes after exposure to inhaled allergens. Symptoms include rhinorrhea (anterior or posterior nasal drainage), nasal congestion, nasal itching, and sneezing.

Classification of allergic rhinitis:

AR may be classified by •

(1) the temporal pattern of exposure to a triggering allergen, such as seasonal (eg, pollens), perennial/ year-round (eg, dust mites), or episodic (environmental from exposures not normally encountered in the patient's environment, eg, visiting a home with pets);

(2) frequency of symptoms.

(3) severity of symptoms.

Classifying AR in this manner may assist in choosing the most appropriate treatment strategies for an individual patient.

AR severity can be classified as

1-being mild (when symptoms are present but are not interfering with quality of life) or

2- more severe (when symptoms are bad enough to interfere with quality of life).

asking the patient about Factors that may lead to a more severe AR which include exacerbation of coexisting asthma; sleep disturbance; impairment of daily activities, leisure, and/or sport; and impairment of school performance or work.

Common triggers of allergic rhinitis:

-Aeroallergens: seasonal allergic rhinitis (SAR, hay fever) - aeroallergen trigger which varies based on location and climate

common triggers in United States include

grasses (timothy, Bermuda) ,outdoor mold spores (*Alternaria*, *Aspergillus*, *Cladosporium* peak in summer, fall),weeds (ragweed) , trees (birch, oak, maple, mountain cedar are common triggers)

perennial rhinitis - common triggers include

dust mite ,indoor molds,animal dander ,pollen in some climates ,occupational allergens.

Conditions associated with allergic rhinitis: 1-Asthma2-Eczema (contact dermatitis)3-Allergic conjunctivitis.

When should we order allergy testing? we should order allergy testing for patients with a clinical diagnosis of AR who do not respond to empiric treatment, or when the diagnosis is uncertain, or when knowledge of the specific causative allergen is needed to target therapy.

Treatment for AR:

1-Non-pharmacological:

avoidance of known allergens or you may advise environmental controls (eg, removal of pets, the use of air filtration systems, bed covers).

2-pharmacological therapy:

ORAL ANTIHISTAMINES :Clinicians should recommend oral second-generation/less sedating antihistamines for patients with AR and primary complaints of sneezing and itching . ex:certizine , levocetrizine

TOPICAL STEROIDS (intra-nasal steroid : for patients with a clinical diagnosis of AR whose symptoms affect their quality of life. ex: triamcinolone , budesonide , fluticasone

INTRANASAL ANTIHISTAMINES: for patients with seasonal, perennial, or episodicex: olopatadine , azelastine

ORAL LEUKOTRIENE RECEPTOR ANTAGONISTS (LTRAs):only patient with AR and asthma who may benefit from this medication

if the treatment fails or inadequate: 1- Immunotherapy. 2- Surgical inferior turbinate reduction

Pharyngitis

Classify pharyngitis?

- Pharyngitis
- Nasopharyngitis
- Retropharyngeal Abscess
- Tonsillitis:
    - Peritonsillar Abscess

Rank infectious etiologies of pharyngitis from most to least common.

Viral

infuenza virus, parainfuenza virus, rhinovirus, coronavirus, adenovirus, respiratory syncytial virus, Epstein-Barr virus, coxsackievirus, herpes simplex virus, cytomegalovirus, enteroviruses, HIV primary infection syndrome

Bacterial

group A β-hemolytic streptococcus (GAS) (Most common), Chlamydia pneumoniae, Mycoplasma pneumoniae, Neisseria gonorrhoeae, Haemophilus in uenzae type b, Corynebacterium diphtheriae, Group C streptococcus, Group G streptococcus, Arcanobacterium haemolyticum, Fusobacterium necrophorum, Treponema pallidum, Francisella tularensis, Yersinia enterocolitica, Yersinia pestis, Chlamydophila psittaci

- **The majority of pharyngitis is viral (50-80%) with 15-30% in children and 10% in adults due to GAS. (also called streptococcus pyogenes).**

List non-infectious etiologies of pharyngitis?

- **post-nasal drainage due to allergic rhinitis**
- **Sinusitis**
- **gastroesophageal refux disease**
- **acute thyroiditis**
- **persistent cough**

What is the most common bacterial cause for pharyngitis?

group A β-hemolytic streptococcus (GAS)

Why GABHS is important?

1- Rheumatic fever 2- scarlet fever

What are the complications of rheumatic fever and scarlet fever?

Rheumatic fever	**scarlet fever**
60% develop chronic rheumatic heart disease (70% mitral valve; 40% aortic; 10% tricuspid; 2% pulmonary). Likelihood correlates with severity of initial disease	acute glomerulonephritis

What are the symptoms and findings suggestive of viral etiology of pharyngitis?

1. Conjunctivitis
2. Coryza
3. Cough
4. Diarrhea
5. Hoarseness
6. Discrete ulcerative stomatitis
7. Viral exanthema

What are the alarming symptoms for someone with sore throat?

1. Drooling
2. Respiratory distress
3. Inability to open mouth fully (trismus) Muffled voice
4. Stiff neck
5. Erythema of neck
6. History of recent foreign body impaction or oropharyngeal procedure (trauma)
7. Recent cocaine smoking
8. Weight loss, fevers, night sweats

What is the best way to use the clinical examination to diagnose group A beta-hemolytic streptococcal (GABHS) pharyngitis?

Centor Score (Modified/McIsaac) for Strep Pharyngitis

Age range Group A streptococcus (GAS) rare under 3	3-14 years +1	
	15-44 years 0	
	≥ 45 years -1	
Exudate or swelling on tonsils	No 0	Yes +1
Tender/swollen anterior cervical lymph nodes	No 0	Yes +1
Temp > 38°C (100.4°F)	No 0	Yes +1
Cough	Cough present 0	Cough absent +1

Can't be used in <3 years old.

Symptoms onset <3 days

Interpretation (point/ item total and % strep)	
Antibiotic therapy	≥ _4 points (55%)
Rapid test or delayed prescription	2 or 3 (29%)
Symptomatic therapy only	≤ _1 (12%)

- **Diagnosis of Streptococcal Pharyngitis**

Which age group is primarily affected by GABHS pharyngitis?

Children 5-15.

How to test for GABHS Pharyngitis?

1-Throat Culture. Culture of a throat swab on a sheep- blood agar plate has been the standard for the documentation of the presence of GAS pharyngitis

2-rapid antigen detection test (RADTs). A major disadvantage of throat cultures is the delay (overnight or longer) in obtaining results. RADTs have been developed for the identification of GAS pharyngitis directly from throat swabs

If Rapid antigen test (RAT) is negative, should I do a throat culture?

a negative RADT should be accompanied by a follow-up or back-up throat culture in children and adolescents, while this is not necessary in adults under usual circumstances

What is the symptomatic treatment for pharyngitis?

symptomatic treatment: Paracetamol
NSAIDs (be aware of gi and renal side effects, aspirin should be avoided in children)
Corticosteroids (short course for selected cases of adults with centor criteria 3-4 with bacterial pharyngitis)

What is the 1st line antibiotic for the treatment of GABHS Pharyngitis?
Penicillin or amoxicillin is the recommended drug of choice for those non-allergic to these agents .

What are the alternative antibiotics for the treatment of GABHS Pharyngitis for people allergic to penicillin?

first generation cephalosporin (for those not anaphylactically sensitive) for 10 days, clindamycin or clarithromycin for 10 days, or azithromycin for 5 days (strong, moderate).

What are the two main possibilities for a patient with a pharyngitis, who tests +ve for GABHS at close intervals?

1-Reinfection 2-chronic carrier

Are chronic GABHS carriers at increased risk of rheumatic fever?

No or limited

do chronic GABHS carriers carry an increased risk of infecting close contacts?

carriers are unlikely to spread GAS pharyngitis

do chronic GABHS carriers need antibiotic therapy? empiric treatment of asymptomatic household contacts of patients with acute streptococcal pharyngitis is not routinely recommended

Do we have to test or treat contacts of GABHS Pharyngitis?

Diagnostic testing of asymptomatic household contacts of patients with acute streptococcal pharyngitis is not routinely recommended

Otitis media (OM)

Acute otitis media is diagnosed in patients with acute onset, presence of middle ear effusion, physical evidence of middle ear inflammation .

-children before school age is most common group affected .

The 3 most common organisms that causes OM:

1-Streptococcus Pneumoniae 2-Haemophilus Influenzae 3-Branhamella Catarrhalis

Symptoms associated with OM :

-Otalgia -Otorrhea -Deafness -Fever -Headache -Irritability -loss of appetite-Vomiting

An AOM diagnosis requires :

-moderate to severe bulging of the tympanic membrane , or

- new onset of otorrhea not caused by otitis externa

- or mild bulging of the tympanic membrane associated with recent onset of ear pain (less than 48 hours) or erythema.

Risk factors of OM:

Pediatrics:

Age (younger) , No breastfeeding ,Pacifier use ,Gastroesophageal reflux ,attending group day care

All age groups:

Allergies , Craniofacial abnormalities , Exposure to environmental smoke or other respiratory irritants ,Family history of recurrent acute otitis media ,Immunodeficiency ,Upper respiratory tract infections.

OM with effusion (OME): OME is defined as middle ear effusion in the absence of acute symptoms.

Which instruments can help diagnose OM & OME?

Pneumatic otoscopy is a useful technique for the diagnosis of AOM and OME

Treatment of OM：

1- Symptomatic treatment.

Analgesics e.g Ibuprofen and acetaminophen are recommended for symptoms of ear pain, fever, and irritability.

2- Treatment with antibiotic.

Conditions which should be treated with antibiotic:

1-Children six months or older with otorrhea or severe signs or symptoms (moderate or severe otalgia, otalgia for at least 48 hours, or temperature of 102.2°F [39°C] or higher): antibiotic therapy for 10 days.

2-Children six to 23 months of age with bilateral acute otitis media without severe signs or symptoms: antibiotic therapy for 10 days

We have a choice whether to start antibiotic therapy or observation in the following conditions:

1-Children six to 23 months of age with unilateral acute otitis media without severe signs or symptoms.

2-Children two years or older without severe signs or symptoms

If observation was chosen, what are the mechanisms that must be in place to ensure appropriate treatment if symptoms persist for more than 48 to 72 hours?

1-Repeat ear examination for signs of otitis media

-If otitis media is present, initiate or change antibiotic therapy

-If symptoms persist despite appropriate antibiotic therapy,

consider intramuscular ceftriaxone (Rocephin), clindamycin, or tympanocentesis

Antibiotic selection for OM : High-dose amoxicillin is the antibiotic of choice for OM.

Oral cephalosporins, such as cefuroxime (Ceftin), may be used in children who are allergic to penicillin.

if symptoms persist 48-72 hours after initiating therapy :

1- Re-examination: If a bulging, inflamed tympanic membrane is observed, therapy should be changed to a second-line agent

a- For children initially on amoxicillin, high-dose *amoxicillin/clavulanate* is recommended.

b- For children initialy on oral cephalosporin, intramuscular *ceftriaxone, clindamycin, or tympanocentesis* may be considered.
What is a common side effect to antibiotic treatment of OM? Diarrhea

Tympanostomy: Tympanostomy tubes can be considered for recurrent OM in the following :

three or more episodes in six months, or four episodes within 12 months with at least one episode during the preceding six months.

Strategies for Preventing Recurrent Otitis Media:

-Check for undiagnosed allergies leading to chronic rhinorrhea

-Eliminate bottle propping and pacifiers.

-Eliminate exposure to passive smoke.

-Routinely immunize with the pneumococcal conjugate and influenza vaccines.

-Use xylitol gum in appropriate children (two pieces, five times a day after meals and chewed for at least five minutes).

Important complications of OM:

-anatomic damage , hearing loss, language delay,Periauricular abscess,Facial nerve paresis,Labyrinthitis ,Labyrinthine fistula,Mastoiditis (most common serious complication of AOM in children),Temporal abscess,Intracranial abscess,Meningitis,Sigmoid sinus thrombosis,Cerebrospinal fluid (CSF) leak.