

وَقُلْ رَبِّ زِدْنِي عِلْمًا



RESPIRATORY SYSTEM

HAYAT BATCH



SUBJECT : Pharmacology

LEC NO. : Summary L5

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Respiratory Tract Infections

Upper Respiratory Tract Infection (URTI)

Definition	Might bacterial or viral infection	Self-limited irritation and swelling of upper airways
Causes		Rhinovirus, influenza virus; bacterial: Streptococcus pyogenes no signs of pneumonia When there is pneumonia, you have upper and lower respiratory tract infection so treatment changes
Symptoms	•Low-grade fever •Facial pressure •Sneezing	Cough, sore throat, runny nose, nasal congestion, headache
Onset		1-3 days after exposure, lasts 7-10 days, can persist up to 3 weeks If it happens Once a year , it is fine اكثر من مرة بالسنة اتحول ل chronic infection و صار بدو treatment غير antibiotics
Treatment		Penicillins preferred for bacterial infections; macrolides for penicillin allergies

Lower Respiratory Tract Infection (LRTI)

Conditions		Bronchitis, bronchiolitis, pneumonia
Treatment		Based on specific diagnosis and causative agent

Antibiotics

Penicillin	Penicillin G	Effective against Gram-positive and -negative cocci (G+), and anaerobes; penicillin G, ampicillin, amoxicillin, carbenicillin, piperacillin second generation third generation fourth generation
Macrolide	Antimicrobial spectrum is slightly wider than that of penicillin > common substitute for patients with a penicillin allergy.	Effective against Gram-positive bacteria, some Gram-negative bacteria, Legionella pneumophila, mycoplasma, mycobacteria, and chlamydia; azithromycin, clarithromycin, erythromycin

Upper Respiratory Tract Infection (URTI): Rhinitis	
Definition	Common cold (viral infection) <i>No role of Abs. (treating the symptoms)</i>
Symptoms	Cough, headache, mild fever, sore throat, runny nose
Onset	2-3 days after infection
Main Virus	Rhinoviruses
Pharmacological Management	1. Dextromethorphan 2. Antihistamines 3. Painkillers 4. Decongestants

Sometimes we give for viral infections antibiotics in case of there is a complication or predisposing factors

Upper Respiratory Tract Infection (URTI): Pharyngitis	
Definition	Inflammation of the throat (pharynx)
Duration	3-5 days
Causes	Bacterial or viral infection <small>Swollen tonsils + high temperature + white places Streptococcus pyogenes: Penicillin or Amoxicillin (Oral) >> Cephalosporin (Cephalexin) >> Macrolide (Azithromycin)</small>
Complications	Sinusitis, acute otitis media <small>• Viral: self-limiting Sometimes we give for viral infections antibiotics in case of complications or predisposing factors</small>
Treatment	Penicillin or Amoxicillin (Oral) >> Cephalosporin (Cephalexin) >> Macrolide (Azithromycin) <small>Conservative + oral CS (1-2 for pain on swallowing) + lidocaine wash + NSAIDs Because there is inflammation, pain • Candida albicans: clotrimazole</small>

Upper Respiratory Tract Infection (URTI): Sinusitis		URTI → sinusitis.
Predisposing Factors		URTI, nasal septum deviation, tooth extractions, smoking, etc. cystic fibrosis and immunodeficiency.
Symptoms	Antibiotics not recommended in those with mild/moderate + for first 7-10 days	(headache or toothache) Nasal congestion, facial swelling, discharge <small>(green or yellow color= use Abs. don't use Abs. bacterial infection or clear= allergy or viral)</small>
Common Pathogens		Viral, Streptococcus pneumoniae, Haemophilus influenzae
Empiric Antibiotic Therapy		❖ Amoxicillin/clavulanic acid >> doxycycline or cephalosporins ^{3rd} (cefixime) >> fluoroquinolone (levofloxacin or moxifloxacin)
<u>❖ Macrolides (clarithromycin or azithromycin) are not recommended for empiric therapy</u> <small>يفضل ما تبلىش فيهم عندك خيارات تانية</small>		<small>من كذا وقت برن صمم combination مثل ما يتخلل تاخر antibiotics عثمان ما يصير resistance و يعمل inhibition لل normal flora و اهم سبب هو علاج problem لانه (chronic continuous resistance sinusitis التي بتعمل symptom هو sinusitis)</small> <small>chronic sinusitis و فيه bacteria ما بتسبب الة</small> Chronic: Intranasal saline, Intranasal corticosteroids, Oral corticosteroids and antibiotics (limited evidence, after culture)

Upper Respiratory Tract Infection (URTI): Acute Otitis Media	
Media	Inflammation in middle ear → fluid retention → bacterial grow
Definition	Inflammation in middle ear causing fluid retention
Symptoms	Ear pain, fever, fullness, irritability <small>tug on the involved ear, difficulty sleeping (children)</small>
Complications	Eardrum rupture, mastoiditis, CNS involvement
Common Pathogens	Streptococcus pneumoniae, Haemophilus influenzae, Staph aureus
Treatment	Amoxicillin-clavulanate >> cephalosporin (Cefuroxime) >> doxycycline or macrolide (Azithromycin)

Upper Respiratory Tract Infection (URTI): Diphtheria	المشكلة في البكتيريا و toxin تاوعا بدك تتعامل معهم	grey or white patch develops in the throat
Symptoms	Sore throat, lack of appetite, low-grade fever, throat patches	
Pathogen	Corynebacterium diphtheriae	
Complications	Myocarditis, nerve inflammation, kidney problems	
Treatment →	To deal with toxin Erythromycin preferred than penicillin في حالة البكتيريا فقط	Diphtheria antitoxin + erythromycin → penicillin

Upper Respiratory Tract Infection (URTI): Acute Epiglottitis	Acute → Not chronic.
Definition	Inflammation in supraglottic region, including epiglottis
Symptoms	Difficulty swallowing, drooling, fever, rapid pulse
Common Pathogens	Haemophilus influenzae, Streptococcus pneumoniae
Treatment When the patient becomes stable	لانه بنعطى بالمستشفى فحتى ما يصير معه resistance بنعطى معه vancomycin Cephalosporin (ceftriaxone) + vancomycin

- Do not use tongue depressor or attempt throat swab
- Patients need airway management before treatment
- requires immediate airway management (tracheal intubation).

Upper Respiratory Tract Infection (URTI): Croup and Laryngitis	• Starts or get worse at night and normally lasts one to two days.
Symptoms	difficult breathing Barking cough, stridor, hoarseness, fever, runny nose
Pathogens	Mainly viral (parainfluenza, influenza) Cephalosporin3rd (ceftriaxone)+vancomycin → in very specific cases
Treatment	contrale Nebulized epinephrine, corticosteroids, specific antibiotics

Disease	Symptoms	Pathogens (common)	Pharmacotherapy
Rhinitis	Cough, headache, fever*, sore throat and rhinorrhea	Viruses	Supportive: Dextromethorphan, Anti-histamines, Pain-killers, Decongestants.
Pharyngitis	Sore throat , difficulty speech and swallowing, swollen tonsils and bad breath	<u>Strep. Pyogens</u> : Penicillin/Amoxicillin (Oral) ^{^^} > Cephalosporin (Cephalexin) ^{^^} > Macrolide (Azithromycin) <u>Viral</u> : self-limiting: conservative + oral CS (1-2 for pain on swallowing) + lidocaine wash + NSAIDs <u>Candida albicans</u> : clotrimazole	
Sinusitis	Nasal congestion, facial swelling, tenderness, discharge (colour?)	<u>Strep. Pneumonia</u> and <u>H. Influenza</u> .	❖ Amoxicillin/clavulanic acid ^{^^} > doxycycline or cephalosporins ^{3rd} (cefixime) ^{^^} > fluoroquinolone (levofloxacin or moxifloxacin) ❖ Chronic: Intranasal saline, Intranasal corticosteroids, Oral corticosteroids and antibiotics (limited evidence, after culture)
Acute Otitis Media	Ear pain (otalgia), fever, sensation of fullness	<u>Strep. Pneumonia</u> , <u>H. Influenza</u> and <u>Staph. aureus</u>	Amoxicillin-clavulanate ^{^^} > cephalosporin (Cefuroxime) ^{^^} > doxycycline or macrolide (Azithromycin)
Diphtheria	Sore throat, lack of appetite, low-grade fever and grey or white patch develops in the throat	Corynebacterium diphtheriae	Diphtheria antitoxin (horses) + erythromycin ^{^^} > penicillin
epiglottitis	Trouble swallowing, drooling, fever, aphonia and an increased breathing rate	Streptococcus pneumoniae and haemophilus influenzae	requires immediate airway management (tracheal intubation). Cephalosporin ^{3rd} (ceftriaxone) + vancomycin
Croup and laryngitis	“barking/brassy” cough, inspiratory stridor, hoarseness, difficult breathing, fever and runny nose Starts or get worse at night	Mainly viral (parainfluenza and influenza) Rarely bacterial	Corticosteroids and nebulized epinephrin Used in very specific cases: Cephalosporin ^{3rd} (ceftriaxone) + vancomycin

