◉Sheet ○Slides

number : 15

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Not to overlap :

Community acquired pneumonia two types :

1.Typical (not in closed area): klibsiella , influenza , pneumococci treated by Augmentin , Cefuroxime , Cifnadir, Cefixime

2. Atypical : mycoplasma, legionella ,chlamydia treated by Azithromycin

***in community we are mostly atypical because they are existing in closed area*

Ex; *child stay in house and he isn't going anywhere no school or nursery school…..etc(we mean he didn't go to close area) and thischild get infected with pneumonia>> as a doctor we treat him with>> Augmentin , Cefuroxime , Cifnadir, Cefixime(treating the lower respiratory infection we upper respiratory because he didn't go to close area)* ***but*** *if he go to close area we treat him with* ***Azithromycin***

❖ Macrolide:

Before we start talking about drug-drug interaction caused by this drug , remember that CYP450 responsible for drug metabolism 99% , has different isoforms , each form have an inducer and inhibitor (by food ,drug, chemicals) not related to the other isoform>> *remember not all drug inhabit this enzyme*

Macrolide especially (Erythromycin and to a lesser extent Clarithromycin) cause inhibition for CYP3A4 which responsible for metabolizing several drugs, as a result increase of the level of other drugs that the patient take in the blood .

Some of the drugs that metabolizing by CYP3A4:Corticosteroids, Cyclosporine , Digoxin , Warfarin , these drugs have narrow therapeutic index so, we shouldn't prescribe for a patient treated with these drugs Erythromycin OR Clarithromycin, if you prescribed them there must be monitoring for the level of the drug in the blood.

Just a note>> if we should prescribe them for patient (Erythromycin and Clarithromycin) we play in doses of the other drugs.>> That isn't going to happen

❖ Aminoglycosides:

These drug are already been subsided because they very nephrotoxic and cause ototoxicity

Cover gram negative bacteria (enterobaterceae, enterobacter, sheigella, salmonella)

Example**: Amikacin, Gentamycin** (not given **more than one week** because the chance of the accumulating of the drug increase, and there we loss the relation between the dose of the drug to its toxicity)

<u>These 2 drugs have serious side effects:</u>

1. **Ototoxicity**: as a Bizzar side effect (problem in heart or hearing), if it's appear the only choice to stop treatment with this drug.

2. **Nephrotoxicity**: Pharmacological side effect as a result of the accumulation of the drug in the kidney here we have to monitor the level of the drug in the blood by measuring the TRAPH AND THE PEAK.
Traph : it tells about the level of the drug before the next dose , it's an indication of how much the body is accumulating the drug

a) So important to know in treating with **Amikacin, Gentamycin** :
   monitor the level of the drug in the blood by measure the TRAPH AND THE PEAK.
b) don't use it more than one week.

Uses:
1. Against drug that produce ESBL (enterobacteriaceae)
2. Against pseudomonas in combination therapy because of its resistance

** pseudomonas : while treating it may develop resistance, as a result we treat with combination more than one drug with a **<u>different mechanism of action</u>** (cell wall inhibitor, inhibitor of protein synthesis ,…) , that's why antipseudomonal penicillin and cephalosporin is frequently used in combination with aminoglycoside and fluoroquinolone for pseudomonal infection outside the UT. We don't combine Augmentin, Cefuroxime, Cifnadir, and Cefixime since they have the same mechanism of action and as a result if the resistant build for one of these drugs it will be built for the rest of the dugs from the same category.

for treatment of Brucellosis> in first week we give injection of **Gentamycin (IM)

❖ Clindamycin :

-Upper diaphragm anaerobes antibiotic
-prescribe for patient has an **odontogenic** infection caused by oral anaerobes

for patient allergic to **penicillin** and used against **aspiration pneumonia** caused by anaerobic bacteria come from the oral cavity as a **definitive** treatment only.

**now we finish protein inhibitor antibiotic.

Inhibition of DNA Gyrase: (no cross reaction with human DNA)

-bacterial DNA gyrase is type 2 topoisomerase that produce transient double strand breaks in DNA
-The best example is the fluuroquinolone, which are specific inhibitor for DNA gyrase that trap the enzyme in its cleavage complex , lead to fragmentation of the DNA and the bacteria can no longer live (strong bactericidal).

–>Spectrum: it covers gram negative and to a little extent gram positive bacteria.

❖ Quinilones :

1 - **Ciprofloxacin** (Cepro 'trade name') :- the first oral drug effective against gram negative-bacteria-most active against gram negative (*Pseudomonas aeruginosa*) and little activity on gram-positive bacteria
- **not active against strep-pneumonia** ,so not effective in the treatment of upper and lower respiratory infection and meningitis
- **used in** the treatment of infection caused mainly by E-coli (lower diaphragm infection) :
A) **complicated urinary tract infection** (caused mainly by **E.coli 90%** and about 10% by staph-saprophticus a G+ve bacteria, and less than 1% such as prostatitis , cervicitis).
B) **gastroenteritis** is a severe diarrhea caused by E.coli,Shigella,Salmonella (ONLY if it persist for more than one day and associated with fever)

2- Metador (Levofloxacin)
-also called respiratory fluoroqunilones , with enhanced gram positive activity and activity against atypical **pneumonia agent**
-used in the treatment of **severe** community acquired pneumonia(a patient with a life threatening situation I cannot depend on his/her immune system and give him/her a bacteriostatic , **so** give him/her a bactericidal drug)
(it covers all the causes : H-influenza,S.pneumonia,Legionella,Mycoplasma,Chlamydia),
-keep in mind that we use cifnidir ,cefuroxime , cefixime and Augmentin to treat community acquired pneumonia and(azithromycin as alternative)

Sorry for any mistakes that may I have done.