Sheet #: 4

Refer to slide no : 3

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Antibiotic and vaccine for health care worker

* How to chose proper Abx
* Consideration before giving Abx

ANTIBIOTIC :

* PCNs
* Chephalospresn (cevarxin , cevroxin )
* Carbapeben ( bepin cenqlican )
* Monobactam ( astiqlican )
* Glycopeptide (vancomycin)
* Aminoglyside ( gentamysin,lidicasim , tretpominic )
* Fluoquionolone (sepra and ledo toxxissm )

\*\*How to chose prober agent :

* Identify of organism
* Antimicrobial susceptibility
* Use the narrowest effective spectrum Abx ( don’t use broad one )
* Host ( age , allergy , renal and lever function , site of infection , pregnant , metabolic abnormality “DM” )

\*\* identify of organism :

If u have pus and infection u can make GRAM STAIN for ( CSF , pleura , synovial , peritoneal , urine , sputum ) then can also CULTURE it

ELISA (mean Ab) : it’s difficult to culture some organism but we know it’s by Ab’s , like ( HIV : we can’t isolate itself but we can see Ab against it ) .. by indirect way :p

PCR : ( HIV , TB , hepatitis C )

CULTURE : we can culture bacteria , virus , fungus , (( best to use before Ab taken by pt )) it doesn’t mean that if the pt took the Ab we can’t do it but the passivity of the test may be decrease .

Bacteriologic statistics : ( the application of know of organism most likely to cause infect in given clinical sitting ) , siliolatis ( if we do blood and biopsy culture only given 5% indication ) , So u should know by experience that the lesion X caused by virus Y and so on

\*\*\* Antibiotic susceptibility :

DISK DIFFUSION ( measure diameter of inhibition )

* E-TEST = Etest is a ‘ready-to-use’ reagent strip with a predefined gradient of antibiotic for the determination of precise MIC values of a wide range of antimicrobial agents against different organism groups.

MINIMAL INHIBITORY CON (MIC) , its difficult to do for each pt

AUTOMATIC METHOD

\*\* Pharmacodynamics profile

AREA UNDER THE CURVE / TIME

MIC

SERUM MAXIM TO ……

U give Ab > give effect > decrease con.

If the MIC (minimum con. Of Ab which inhibit the growth of microorganism ) increase it does not mean that the Ab good its dependent !!

Increase time of giving Ab it also does not mean that the Ab is good , ( its Ab dependent )

Some Ab work if Cmax high , other AB increase its con. It will kill more … like B-lactam (penicillin) its time dependent Ab so its given 3 to 4 per day and no need to give high con. , Aminoglycoside (chetamysin , abicasin ) given 1 per day with high dose and it will affect all day because its con. Dependent .

Look to the Area under the cure to Ab “C” .

Resistant selection :

Imagine pt with liver abscess with million staphylococcus aureus , one of them resistant to Ab , when we give Ab the pt should cure ( reality ; when we give Ab it kill 70% and 30% immune system respond to kill it ) . So if u have low immunity the infection won’t cure , u will have remaining bacteria ( that carry the resistant phenotype )

The doctors DOESN’T make this resistant organism by giving wrong Ab ! but this ristant chain available in people who almost insulated but in a low level , but when this people come in contact with another one or when they in system ( hospital) where there’s high exposure to Ab > it will become abundant .

If u have pt with disease y given Ab X and cured and after one month make a culture u may finding E.coli resistant not only to Ab X but to another one ,, so , that when u expose to Ab u didn’t make resistant to it only but also to another one !!!

\*\* so much knowledge u should know about Ab , u can use publish book or mobile app ( simply u can know the dose and side effect …. Etc )

\*\* Host factor : u should ask the pt if they have low immunity , age , allergy to any drug and what it is ( skin rash , anaphylactic shock , edema )history of adverse reaction , N.V , immune disorder , with age increase possibility for renal failure and decrease absorption , tetracycline “ doxycycline “cause ( discoloration to tooth and then problem to the bone , contraindication to pregnant , Aminoglycozide cause hearing problem

Tetracycline = doxycycline (alternative drugs )

Slide( 19):

The same

Metabolic disorder

Dextrose load🡪 may lead to increase glucose level in diabetic patient

Slide (20)

If we have pregnant woman or she doesn’t know about pregnancy you should ask the patient before describe any antibiotics because we have some dangerous drugs may affect on fetus like tetracycline, metronidazol and some drugs can be use it (benefit rises the risk) like PCN ,cephalosporins ,erythromycin most of them safe .

The problem in pregnancy we can’t do any study we can’t give them druges to show the results but from where we take this data?

Some counters like British register pregnant women and what the antibiotic they use then we look to results if we have any problem we recorded in addition to that w have animal study.

Slide (21)

If you want give your patient I.V antibiotics you should know (renal & liver function test )to know if we have any problem in kidney .

Slide (22):

Considerations about antibiotics :

When you give antibiotics you should know the inflammation site why ?

Because some antibiotics not reach BBB as (meningitis case) and some antibiotics they don’t reach to intraocular site so you should choice proper antibiotics .

slide (23)

the same (little ABX better than huge number of ABX) ABX= antibiotics

slide (24)

the same

slide 25

Synergism: combination and cooperation of two or more drugs to produce combined effect greater than the sum of their separate effect

Slide 26:

Antagonism if you want to do study on ABX in vitro you show that ABX actually they antagonist each other, but clinically we don’t have.

In past we have experience about (meningitis pt) they treated by PCN=penicillin and tetracycline the results was some pt die and some of them have complication because this (combination therapy ) so PCN & tetracycline antagonist to each other.

 Wrong combination :

Ampicilin +ammoxicillin -🡪 we don’t have reason to use them together so lead to increase resistant .

Slide (27)

Adverse effects of ABX(side effects):;

* 5% of pts will have a side effect

The most important side effect is **anaphylaxis** the percentage of anaphylaxis is

1:10,000🡪 anaphylaxis

1:100,000🡪lead to death from anaphylaxis .

So :it’s not very dangerous case

But the dangerous form in PNC I.V or IM (percentage of allergy in I.V greater than orally)

The dangerous allergy usually occur after 30-15 min after that everything is normal so you should monitoring pt after ABX I.V until 30 min .

Allergy test not very important

Slide 30

Rout of administration : depend on severity of infection

Stable infection 🡪orally

 serious infections 🡪 I.V

slide 31

the same

slide32

 the same cost (last consideration ) if we have cheap ABX act as expensive one Why we choice expensive ???

Slide ( 33) :

Needle stick

* If this needle injected in patient with HBV,HCV,HIV may the virus transmission

 To our body .the percentage risk of transmission (rule of three):

* Hepatitis B virus 30%
* - Hepatitis C virus 3%
* - HIV 0.3%

Board question : which virus has the most risk of transmission 🡪 HBV

Slide (34) :

HBV 🡪 3 shots after take it about 1-2 months you should check the titration level it should be 10IU/I if less that mean your body not response to vaccine ,we have 5% of population non-response .

The prevalence of HBV in Jordan🡪 10%

Slide ( 35)

The same (The series is administered once in your life )

Slide( 36)

The same

Slide (37)

Picture 🡪 HBV dangerous not fatal but in long time with HBV may lead to some complication and high risk .

Slide (38)

If you made the titer test :

1. higher than10UI/I 🡪 you are protected for the next 20 years .
2. less than 10UI/I🡪you must repeat vaccination then make titer test if rises above 10UI/It’s good if not so he/she non-responsive .

some people they don’t make titer test after 1-2 months they make it after 1-2years then find zero level (non-detectable data )

so who differentiate between none responsive person and physiology decreased level with time ?

we give them dose of antigen vaccine then after 1-2months we make titer test if more >10 UI/I so the level decreased with time

if less <10UI/I complete the dose of antigen until rises otherwise nonresponsive person .

causes of nonresponsive :

1)nature of immune system (normal variation )

2)may he/she infected by HBV .

Slide 39:

The same

Slide (40+41):

The same (Influenza vaccine)

You can take it any time except (April 4/may 5) because circulation of influenza in cold and dry region until (April/may ).

Some people take influenza vaccine but they infected by influenza because we have a great number of virus can lead to same sign and symptom why we give influenza virus vaccine because influenza virus the most dangerous among other .

GB syndrome 🡪disease in nervous system similar to polio

In past GBS was associated with influenza virus but the percentage to occur 1:million (negligible)

* Contraindication
	+ Previous GB syndrome 🡪 to avoid any relapse
	+ Egg allergy🡪 because influenza virus give to eggs then collected from eggs (not absolute contraindication)

-Allergic reaction to any component

You should take vaccine in hospital or clinic 🡪 to avoid any complication

 Slide (42-45):

The same

20% of women in Jordan they don’t have immunity against rubella although all women taken vaccine how? Because some vaccine activity (immunity)decreased with time.

Complication of rubella if pregnant woman in first trimester infected by rubella may lead to congenital rubella syndrome (dangerous disease) prevalence =90% some counters indicate to abortion .

How we know if we have immunity or not? By make (rubella IgG test)if negative we don’t give to pregnant woman because live vaccine (slide 42)

The most dangerous virus in pregnant woman in Jordan is(CMV) cytomegalovirus may lead to deafness .

Slide 46:

Varicella =chicken box

How we know about our immunity against varicella ?

If infected by varicella virus in past you have immunity

If not we have two possibility :

1)may infected by silent infection without any sign and symptom

2) you don’t have any immunity against varicella virus so you should take live vaccine .

 Slide 47:

Tetanus (dangerous diseases and preventable)

How we can get tetanus ? in sharp injures may lead to tetanus .

Slide 48:

The same

GOOD LUCK ☺