



Reproductive
System



PHARMACOLOGY
432 TEAM



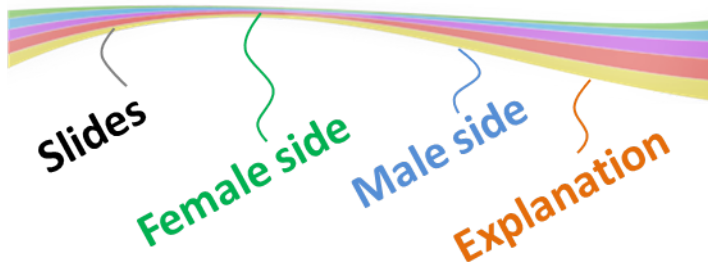
TREATMENT OF SYPHILIS & GONORRHEA'S

Learning Objectives:

1. List the drugs used in the treatment of syphilis & gonorrhoea.
2. Describe the mechanism of action and adverse effects of each drug
3. Describe the contraindications of drugs used
4. Describe the recommended regimens used for treatment of syphilis & gonorrhoea.
5. Know the alternative treatments in allergic patients

This lecture was done by:
Mohammed Abalkhail

And reviewed by:
Latifah Al-Fahad





Mind Map

SYPHILIS

1st line of treatment

Penicillins

Penicillin G, Benzathin P. , Procaine P.

Alternatives

Tetracyclines:
Doxycycline

Macrolides:
Azithromycin

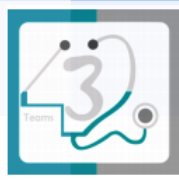
Cephalosporins:
Ceftriaxone, Cefixime

GONORRHEA

3rd generation Cephalosporins
Ceftriaxone, Cefixime

Fluoroquinolones:
Ciprofloxacin

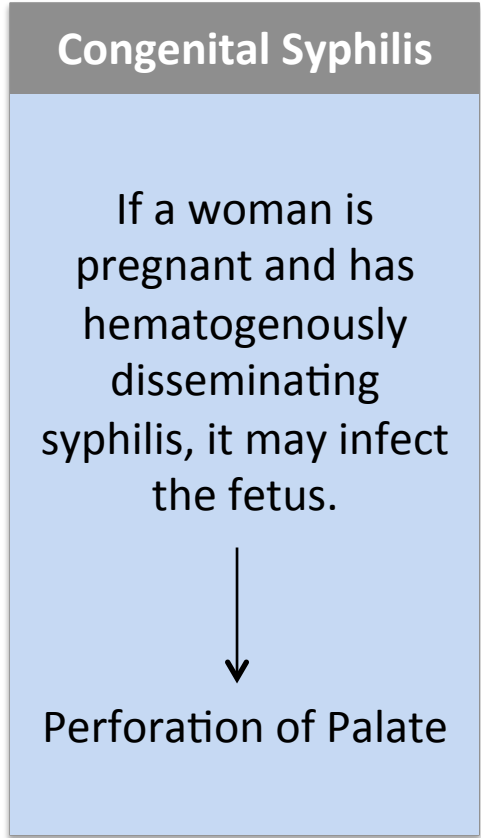
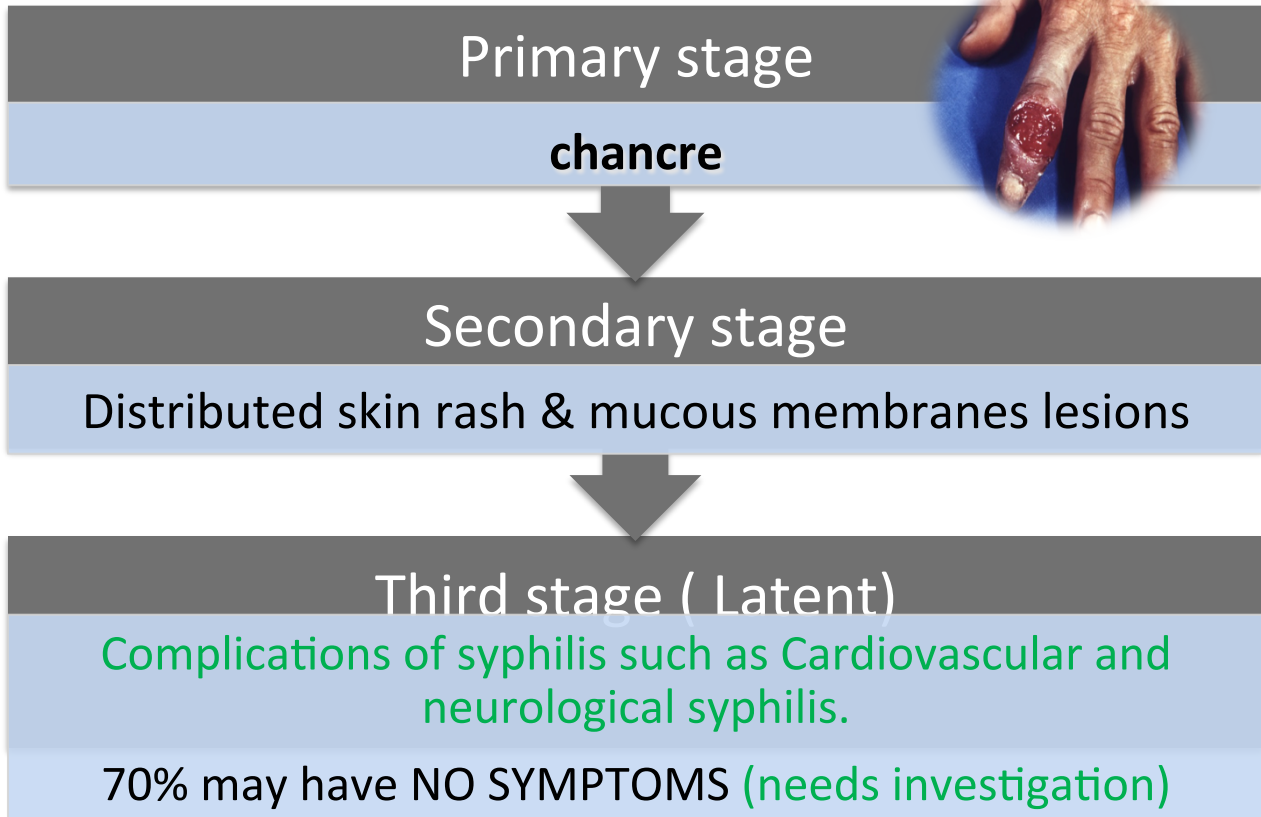
Spectinomycin

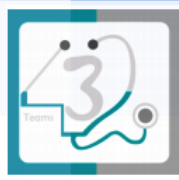


Syphilis

What is Syphilis?

- Sexually transmitted disease caused by bacterium **Treponema Pallidum**





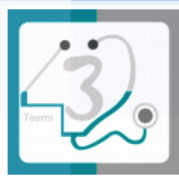
For all stages

1ST LINE OF TREATMENT

PENICILLINS (Beta Lactam Antibiotics)

Mechanism	Inhibit the synthesis of bacterial cell wall These drugs are bactericidal	
Preparations	Penicillin G → I.V. (Short duration of action)	<ul style="list-style-type: none"> • All Acid unstable (cannot be given orally) • Penicillinase sensitive (destroyed by bacteria in case of resistance)
	Procaine → I.M. (Long acting (24-48hrs)) <i>not preferred</i>	
	Benzathine → I.M. (Long acting (every 3-4 weeks))	
Side effects	<ul style="list-style-type: none"> • Hypersensitivity - just in 10%. (up to anaphylactic shock, tests are required before injection) • Convulsions with high doses or in renal failure • Super infections 	

USE ALTERNATIVE THERAPY IN CASE OF HYPERSENSITIVITY



ALTERNATIVES

Syphilis

	TETRACYCLINES	MACROLIDES	<u>3rd Generation cephalosporins</u>
	Mainly Doxycycline (100mg BD for 14days)	mainly Azithromycin	e.g. Ceftriaxone, cefixime
Mechanism	<ul style="list-style-type: none"> •Bacteriostatic •Inhibit bacterial protein synthesis by reversibly binding to 30 S bacterial ribosomal subunits . 	<ul style="list-style-type: none"> •Bacteriostatic on low doses and Bactericidal on high doses •Inhibits bacterial protein synthesis by reversibly binding to bacterial 50 S ribosomal subunits. 	<ul style="list-style-type: none"> •Inhibits bacterial cell wall synthesis •Bactericidal •β-lactam antibiotics
Pharmacokinetics	<ul style="list-style-type: none"> •Well absorbed orally •Long-acting •Twice daily for 14 days 	<ul style="list-style-type: none"> • Acid stable (oral) • Penetrates into most tissues except CSF • T1/2 2-4 days long acting • Once daily dose • Should be given 1hour before or 2 hours after meals or on empty stomach for good absorption, to minimize gastric upset • No effect on cytochrome P450 	-----

For 1st – 2nd stages



ALTERNATIVES

Syphilis

	TETRACYCLINES	MACROLIDES	3 rd Generation cephalosporins
Side effects	<ul style="list-style-type: none"> nausea, vomiting, diarrhea & epigastric pain (given with food) Hepatic toxicity (prolonged therapy with high dose - not common) Phototoxicity - not common Effects on calcified tissues → Brown discolouration of teeth in children Deformity or growth inhibition of bones in children Vertigo (vestibular problems) Superinfections. 	<ul style="list-style-type: none"> Gastric upset - Nausea, vomiting, abdominal pain & diarrhea. Allergic reactions - urticaria, mild skin rashes. 	<ul style="list-style-type: none"> Allergic manifestations (but not up to anaphylactic shock) Thrombophlebitis (inflammation of the vein at the site of injection) Superinfection <u>Diarrhea</u>



Contraindicated with Pregnancy, Nursing mothers + Children **below 10 yrs old**

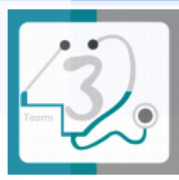


Neurosyphilis

Penicillin preparations (drug of choice, no other drugs are effective). Start with big doses of penicillin G, or Procaine penicillin or Benzathine penicillin. The doses and duration of therapy depends on the case

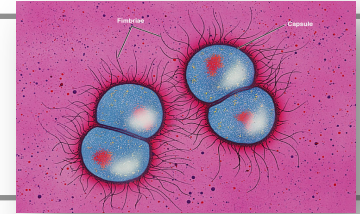
Syphilis in Pregnancy

- First drug of choice is penicillin. Tetracyclins are contraindicated. Cephalosporins and macrolides could be used, but not preferred.
- ALWAYS go with penicillin. If there was hypersensitivity, start with the desensitization method, where you start with low doses, increase it gradually, until you reach the therapeutic dose.



Caused by **Neisseria gonorrhoea**, a pus producing bacteria

Asymptomatic in female.



A. Uncomplicated gonorrhoeal infection

1ST LINE OF TREATMENT

3rd generation cephalosporins

ceftriaxone, IM or **cefixime**, PO

given with
azithromycin or
doxycycline

Macrolides

Azithromycin as a single oral dose or in combination with ceftriaxone. Used alone in case of cephalosporins hypersensitivity. No problem with pregnant or nursing mothers.

Fluoroquinolones

Next slide!

- Bacteria is penicillin resistance, so we start with cephalosporin.
- Patient will be allergic to cephalosporins, if he/she allergic to penicillin. So choose other drug.

PO: means Per Oral



Fluoroquinolones

e.g. **Ciprofloxacin** or **Ofloxacin** or **Levofloxacin**

ALTERNATIVES

Spectinomycin

Mechanism

All are bactericidal
Inhibit DNA synthesis **by inhibiting DNA gyrase enzyme**

Inhibits protein **synthesis by binding to 30 S** ribosomal subunits

Side effects

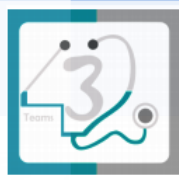
- Nausea , vomiting & diarrhoea
- Headache & dizziness
- **May damage growing cartilage and cause arthropathy.**
- **Phototoxicity** - **avoid excessive sunlight**

- Pain at the site of injection
- Fever
- Nausea
- Nephrotoxicity (**not common**)

Contraindication

- Pregnancy
- Nursing mothers
- Children under 18 years**

Indicated If pateint allergic to Ciprofloxacin. **As a single dose of I.M. injection.**



B. Complicated gonorrhoeal infection



Spread through blood stream to eye, joints, heart valves and brain.
Newborn eye infections may lead to blindness

Antibiotics that are no longer recommended for gonorrhoea treatment due to resistance:

1. Sulfonamides
2. Penicillins (other than the ones already discussed)
3. Tetracyclines (other than the ones already discussed)
4. Oral cephalosporins (1st generations)

Treatment of conjunctivitis in new born: need immediat treatment

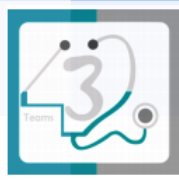
Silver nitrate

Germicidal effects are due to precipitation of **bacterial proteins** by liberated silver ions

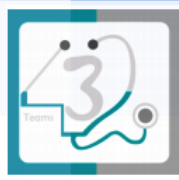
ERYTHROMYCIN

0.5% ointement for teatment & prevention of corneal & conjunctival infections

Put into conjunctival sac once immediately after birth (**no later than 1h after birth**)



- ★ Penicillin is the first line of treatment of syphilis
- ★ If patient allergic to penicillin we give one of the alternatives :
Tetracyclines e.g. Doxycycline, Macrolides e.g. Azithromycin, 3rd Generation Cephalosporins e.g. Ceftriaxone, cefixime
- ★ Tetracyclines is contraindicated with children under 10 y old
- ★ Tetracyclines brown discolouration of teeth and growth inhibition of bones in children.
- ★ Penicillin, Cephalosporins and Fluoroquinolones are **bactericidal**.
- ★ Doxycycline and Spectinomycin are Inhibit bacterial protein synthesis **by reversibly binding to 30 S** bacterial ribosomal subunits. And Azithromycin **by 50 S**
- ★ 3rd Generation Cephalosporins is drug of choice to treat Gonorrhoea.
- ★ Cephalosporin drug group are **β -lactam antibiotics**
- ★ If patient is allergic to penicillin choose other than cephalosporin .
- ★ Fluoroquinolones is contraindicated with adolescence under 18 y old



Q.1 The drug of choice for syphilis treatment is:

- A. Gentamycin
- B. Penicillin
- C. Chloramphenicol
- D. Doxycycline

Q.2 Antibiotics inhibiting the bacterial cell wall synthesis are:

- A. Beta-lactam antibiotics
- B. Tetracyclines
- C. Macrolides
- D. Aminoglycosides

Q.3 arthropathy side effect is caused by which of the flowing:

- A. Doxycycline
- B. Azithromycin
- C. Ciprofloxacin
- D. Ceftriaxone



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432 TEAM



Pharmacology Leaders
Tuqa Al-Kaff & Abdullah Al-Anzi

Pharmacologyteam1@gmail.com