

## Sexually Transmitted Diseases Practical





### Objectives:

- Name various **etiological agents** causing sexually transmitted diseases.
- Describe the **clinical presentations** of sexually transmitted diseases.
- Discuss the **microbiological methods** used for diagnosis of sexually transmitted diseases.
- Outline the **management** of sexually transmitted diseases.

**Remember:** This work has been voluntarily made, so there is no guarantee whether or not the exam will go out of this file, but we tried to include everything that may come in the exam.

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### Color codes:

-  Doctor's Notes.
-  Answers.
-  Extra.
-  Important

### Resources:

- 436 girls slides
- 436 boys slides
- 435 & 434
- 431 & 430 team work.
- Doctors notes.

### Dr.Malak introduction

Sexual transmitted diseases are caused by the organisms that transmitted from one person to the other person through the sexual contact.

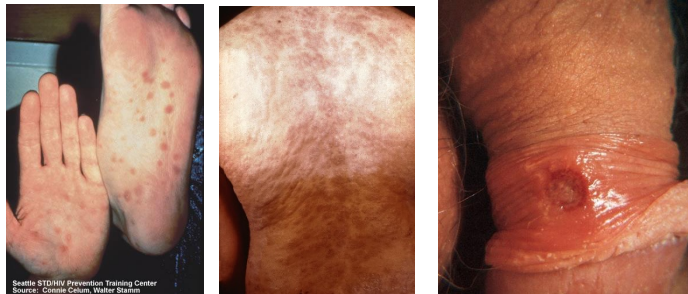
- can be classified into tow groups:
    - 1- **systematic STDs** characterized by symptoms and signs not related to genital area.
    - 2- **localized STDs** characterized by symptoms and signs related to genital area.
  - **localized STDs** Further divided into two groups based on the symptoms :
    - 1- localized STDs with lesions, Such as ulcer and warts.
    - 2- localized STDs with discharge.
- In this lecture we're going to discuss three cases of **localized STDs**.

## Case 1: Syphilis

A 23-year-old alcoholic and drugs (cocaine) addict single male arrived from his trip to South East Asia four months ago. He gave history of **multiple sexual partners** imp risk factor.

Two months ago , he developed ulcer on his penis, which disappeared completely.

A full physical notes a rash on both his **palms** and his **soles** rash on palms and soles very important clue to diagnose Syphilis.



- What are the possible causes for his presentation?

- ❖ *Treponema Pallidum*. causes syphilis.
- ❖ *Herpes Simplex Virus 2*. Causes Genital Herpes.
- ❖ *Haemophilus Ducreyi*. Gram negative coco-bacilli.




When ask about the cause always mention the organism not the disease.

Examples: what cause genital ulcer? Don't say Syphilis because it is the diagnosis, you need to mention the organisms.

What can cause a painful ulcer? Don't say Chancroid.

You should say **Haemophilus Ducreyi**.

- How could you differentiate between them based on signs and symptoms of the patient?

Ulcer	Presentation	Etiology	Ulcer	Lymphadenopathy (Babo)	Systemic
<b>Chancroid</b>		<i>Haemophilus Ducreyi</i>	<b>Wet, painful.</b> And Multiple, irregular border, superficial. (Soft ulcer)	Inguinal, tender.	Present
<b>Chancre</b> the ulcer was painless ulcer because it has not been noticed by the patient.		<i>Treponema Pallidum</i>	<b>Dry, painless and raised margin.</b> Single, (hard deep ulcer)	Inguinal, non tender	Depends on stage
<b>Ulcerated Vesicles</b> vesicles may rupture to cause painful superficial ulcer		<i>Herpes Simplex Virus 2</i>	<b>Multiple, shallow and painful.</b>	Occasionally present.	In primary

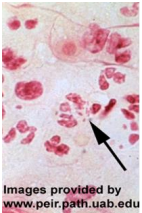
- What investigations would you like to order for him?

- In general how to diagnose infectious diseases?**

- 1- microscopic examination of the lesion.
- 2- culture.
- 3- **antigen** detection by Direct immunofluorescence.
- 4- detection of specific **antibody** that present in the serum of the patient.
- 5- molecular test to detect the **organism gene**.

- We collect the samples from:**

- 1- deep ulcer swap and send it for microscopic examination and culture.
- 2- blood for Syphilis serology test.
- 3- scrubbing the ulcer for antigen detection.

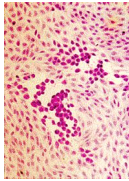
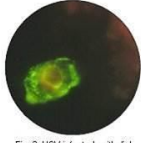
Organism	Microscopy	Culture	Direct Fluorescent Antibody (DFA)	Serology
<i>Haemophilus Ducreyi</i>	In the interpretation it's very imp to mention the absent or present of the Pus Cells.  <b>Gram stain: gm -ve small bacilli &amp; pus cell</b>  The pus cells tell us that there is a disease going on.	Selective media	NA *not applicable*	NA *not applicable*
<b>How to diagnose Chancroid?</b> Signs & symptoms + gram stain Gram stain will show: gm -ve small bacilli & pus cell + culture with selective media.				

- What investigations would you like to order for him?

Organism	Microscopy	Culture	Direct Fluorescent Antibody (DFA)	Serology
<i>Treponema Pallidum</i> <sup>1</sup>	Dark Field microscope: Motile Spirochetes <sup>2</sup>	Not grown	Positive	Screening tests <sup>3</sup> : RPR <sup>5</sup> & VDRI <sup>6</sup> Confirmatory tests <sup>4</sup> : TPHA <sup>7</sup> , FTA.ABS <sup>8</sup> MHA-TP <sup>9</sup>

**How to diagnose Syphilis?** depend on the stage of the disease.

In the primary and secondary stage when there's a lesions we diagnosed by the Dark Field microscope + DFA that can be detect direct antigen of TP + serology that detect antibodies against TP.

<i>Herpes Simplex Virus 2</i>	EM -NA Electron microscope	Produce cytopathic effect in cell culture 	Positive  Apple Green	IgM IgG
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**How to diagnose genital herpes?** they used to diagnose it with Electron microscope But it is Not applicable anymore, they replace it with DFA to detect HSV2 antigen.

1- We take the sample by scrubbing from the base of the vesicle.

2- Culture: looking for the cytopathic effect

3- Serology :

- the present of specific IgM against HSV2 + absent of IgG = indicate primary infection.

- Present of both = can indicate primary or recurrent depends on the stage.

1- We can't see it in light microscope because it is very thin.

2- Because we can't see it with the light microscope we use either special stain or special microscope. With *Treponema Pallidum* (TP) we use Special microscope called: dark field microscope.

3- We have two types of serology tests for Syphilis : **1- specific TP antibody test. 2- non-specific TP antibody test.** It's called non-specific bc we use a non specific TP antigen to detect TP antibodies.

Here we first use **non-specific test**, why? Bc it's use for screening, monitor and follow up the patient and for diagnosis of congenital Syphilis, also it's rapid and less expensive.

4- Once **non-specific test** is positive our next step is to do **specific test**, why? For conformity Bc non-specific test may give us a false positive results.

5- "Rapid Plasma Regain" test.

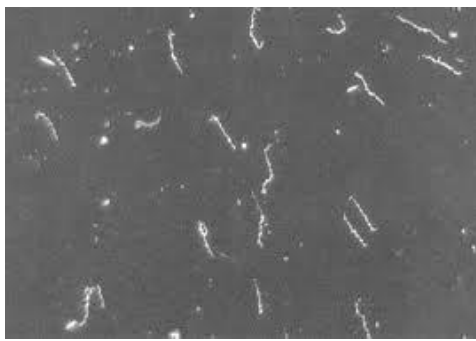
6- " venereal disease research laboratory" test.

7- " *Treponema pallidum* hemagglutination assay" test.

8- "fluorescent treponemal antibody absorption" test.

9- " microhemagglutination assay for *Treponema pallidum* antibodies" test.

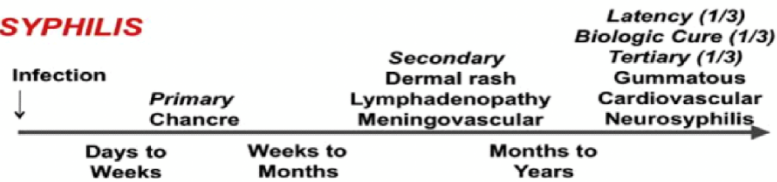
- What is the most common method used to diagnose herpes?  
Direct immunofluorescence by detection of hsv 2 antigens  
"the presence of **Apple Green** fluorescence indicates positive results"
- Other method used to diagnose herpes?  
- **culture** take 1 to 2 days.  
- **PCR** can used most rapid sensitive method usually used in congenital herpes but can used in any herpes type either congenital or not.
- Describe the organism under the microscope "**dark field microscopy**"?



Very thin and coiled spirochetes.

- What is the most common method used to diagnose syphilis?  
**Serology.**  
- Screening (**non-specific TP antibody test**):  
RPR & VDRI  
- Confirmatory (**specific TP antibody test**):  
TPHA, FTA.ABS & MHA-TP.
- What is the likely diagnosis and the stage of the disease in this case?  
**Secondary syphilis.**
- What are the benefits of the non-specific serology tests RPR?  
- Screening and monitoring the patient's response of the treatment (they will be **negative** after effective treatment) in contrast of the **confirmatory tests** which will remain **positive for life** even after effective treatment.  
- **Example1:** negative for RPR, Positive for TPHA - → the patient has acquired the syphilis infections and has been treated.  
- **Example 2:** positive for RPR and positive for TPHA - → he still has the syphilis infection.
- What are the investigations that you would like to order for him?
- Explain how those investigations would help you?  
1- **Microscopy:** dark filed microscopy. How? It will show motile spirochetes.  
2- **Direct Fluorescent Antibody** = Will show positive results.  
3- **Serology** = We will perform screening methods first (RPR)and (VDRL) if positive results → do the confirmatory tests : TPHA ,MHA-TP and FTA.ABS also the screening tests (RPR) will help us to monitor the patient's response to the therapy.

## SYPHILIS



- Primary Syphilis characterized by chancre painless ulcer.
- Secondary syphilis characterized by rash, lymphadenopathy & meningovascular.
- Latent stage: with no manifestation and +ve serology test.
- Tertiary: Neurosyphilis and cardiovascular syphilis.

- If the secondary syphilis not treated what are the possible consequences?
  - **1/3 latency.** Positive for screening and confirmatory tests.
  - **1/3 biologic cure.** No signs and symptoms negative for screening tests and positive only for confirmatory tests.
  - **1/3 tertiary.** Noninfectious stage.  
(gummatous –skin and bones, cardiovascular and neurosyphilis) - neurosyphilis appear in tertiary except in HIV patent appear in 2ry syphilis.

- Briefly outline the management of this patient?

- **Patient :**

- **Benzathine penicillin IM(no allergy) → Doxycycline (allergy).**

You can Write any other Antibiotic for Treponema e.g. Penicillin G.

If patient is Hypersensitive: Tetracycline or clarithromycin.

- **Counseling and Education.**

- **tested for other STD especially HIV.**

- **Look for the partner.**

- As summary :

Secondary Syphilis	
Presentation	rash on palms and soles, history of ulcer and sexual relationship with multiple sexual partners.
Etiology	<i>Treponema Pallidum.</i>
Ulcer	Chancre, Dry, painless and raised margin.
Diagnosis	<ul style="list-style-type: none"> <li>- Dark Field microscopy.</li> <li>- DFA .</li> <li>- serology Screening by RPR, VDRI &amp; Confirmation by FTA.ABs or MHA-TP .</li> </ul>
Treatment	Benzathine penicillin IM → allergy Doxycycline.

## Case 2: Gonorrhoea

A 35-year-old married male presented to the emergency room complaining of **dysuria** for the last 24-hour and noted some "**pus-like**" drainage in his underwear and the tip of his penis.



- What is the most likely diagnosis?

**Urethritis.**

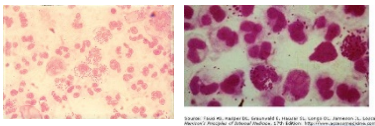
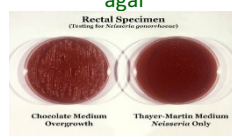
Calcification of urethritis (especially in men):

- 1- Gonococcal Urethritis (pus-like discharge)
- 2- non-Gonococcal Urethritis (thin discharge)

- What are the possible causes for his presentation?

	presentation	Organisms	Urethritis
<b>Gonococcal Urethritis</b>		<b>Neisseria gonorrhoeae</b>	Purulent discharge. مهم تحدد نوع (discharge)
<b>Non-gonococcal urethritis</b>		<b>Chlamydia trachomatis</b>  <b>Others:</b> <ul style="list-style-type: none"> <li>• <i>Trichomonas vaginalis.</i></li> <li>• <i>Mycoplasma.</i></li> </ul>	Mucopurulent. مهم تحدد نوع (discharge)

- What are the investigations that you would like to order for him?
- Explain how those investigations would help you?

	Organisms	Smear/Culture	Immunological tests Detect the antigen	Molecular testing Detect the organism genome
Gonococcal Urethritis	<i>Neisseria gonorrhoeae</i> .	Gram -ve diplococci & pus cell  Selective media. (Thayer-martin <sup>10</sup> ) & chocolate agar 		+ve (Gold Standard) + Co-agglutination test + Fermentation
Non-gonococcal urethritis	<i>Chlamydia trachomatis</i> (most common).	Pus cell/ McCoy Cell culture. Finding: number of intracellular C. trachomatis inclusion bodies.	DFA positive for chlamydia ELISA Rapid test.	+ve (Gold Standard). for screening
	<b>Others :</b> - <i>Trichomonas vaginalis</i> . - <i>Mycoplasma</i>	Wet mount: pus & TV/Culture Pus cell / Special media culture	EIA enzyme immunoassay EIA enzyme immunoassay	+ve   +ve

- if the gram stain shows pus cells with organisms → gonococcal urethritis → *Neisseria gonorrhoeae*.
- if the gram stain shows pus cells without/organisms → non- gonococcal urethritis → *Chlamydia trachomatis*
- Base on the finding, what is the most likely diagnosis?  
gonococcal urethritis .
- Briefly outline the management of this patient?
  - **Patient :**
  - **Ceftriaxone.** why chlamydia is resistant to ceftriaxone? because it does not have cell wall nor peptidoglycan.
  - **Azithromycin, Ciprofloxacin, Tetracyclin, Erythromycin** → if the infections is combination ( neisseria gonorrhoea and chlamydia trachomatis).
  - Screen for other STDs.
  - **Look for the partner.**

**10-** Because it has a specific antibody that will kill other organisms, except *Neisseria gonorrhoeae*.  
*Neisseria gonorrhoeae* will grow as non hemolytic colonies on chocolate agar, and will ferment the glucose only and won't ferment the maltose, and this is imp to differentiate between *Neisseria gonorrhoeae* & *Neisseria Meningitidis*.

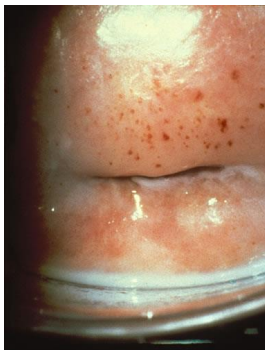


- As summary:

	Gonococcal Urethritis	Non-gonococcal urethritis
causative agent	<i>Neisseria gonorrhoeae</i>	<i>Chlamydia trachomatis</i>
presentation (discharge)	<b>Purulent</b> whitish yellowish some time with granules.	<b>Mucopurulent</b>
sample	squeeze penis take discharge if no come take from inside.	
Gram stain	kidney shape <b>intracellular gram - diplococci within pus cell.</b>	pus cell without any organism
other test to diagnose	culture on <b>thayer-martin agar or chocolate agar</b> oxidase + <b>Urine suap PCR glucose</b> fermentation.	<b>McCoy cell culture</b> (rarely done) oxidase + Urine suap PCR
treatment	Ceftriaxone, also treat partner	Doxycycline or Clarithromycin

## Case 3: Trichomaniasis

A 24-year-old female noted **vaginal itching** and irritation with a discharge. Previously, she developed a yeast infection that was treated with over-the-counter medications and resolved. Thinking that this was recurrence, she again self-treated. This time, however, the symptoms did not resolve. She presented to her family physician for management. On examination there is a bad odor along with a frothy discharge and **strawberry cervix**. Swab of the secretions was taken in order to perform tests.



Strawberry cervix

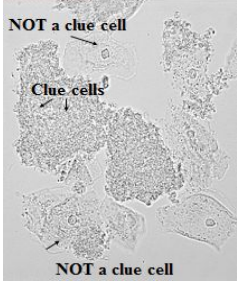
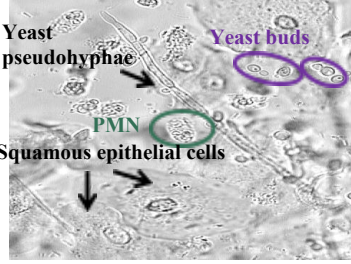
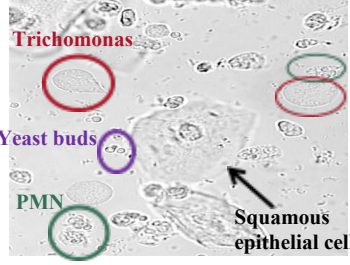
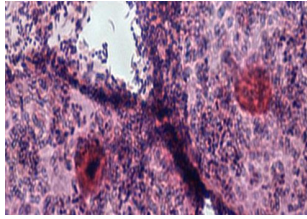

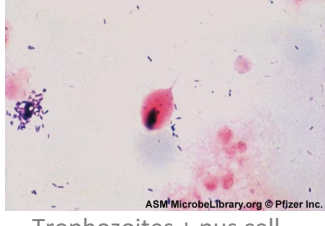
- What are the possible causes for her presentation?
  - ✓ **Bacterial vaginosis.** by *Gardnerella Vaginitis* due to alteration of Ph and the lactobacilli may present in a low number of absent.
  - ✓ **Candida Vaginitis.**
  - ✓ **Trichomoniasis.**
  - ✓ Allergic vaginitis.
  - ✓ *Chlamydia trachomatis.* Usually cause cervicitis.
  - ✓ *Neisseria gonorrhoeae.* Usually cause cervicitis.
- What are the investigations that you would like to order for him?
- Explain how those investigations would help you? The sample: vaginal discharge.

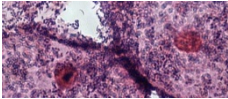
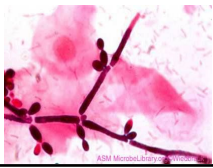
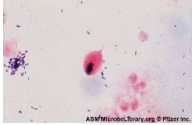
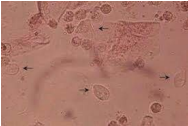

<b>PH (first)</b> <small>Normal vaginal PH = 3.5-4.5</small>	if it is more than 4.5 indicates bacterial vaginosis and trichomonas vaginalis. but if below 4.5 indicates candida vaginalis.
<b>Whiff test<sup>11</sup></b>	if it produces bad smell → indicates positive results ( from anaerobic organisms) positive with bacterial vaginosis and trichomonas.
microscopic examination either by gram stain or <b>Wet prep<sup>12</sup></b>	clue cells → bacterial vaginosis, pseudohyphae → candida vaginalis. Movingvagella → trachomonis vaginalis.

**11- Whiff test:** A sample of discharge is checked to see if a strong fishy odor is created when a special solution is added. A fishy odor usually means you have bacterial vaginosis.

**12- Wet mount:** A sample of vaginal discharge is checked for bacteria, white blood cells, and unusual cells called clue cells. If clue cells are present, it means you may have bacterial vaginosis.

- What are the investigations that you would like to order for him?
- Explain how those investigations would help you?

	Bacterial vaginosis	Candida vaginitis	Trichomonas vaginalis
Wet prep	 <p>NOT a clue cell Clue cells NOT a clue cell</p>	 <p>Yeast pseudohyphae Yeast buds PMN Squamous epithelial cells</p> <p>PMNs: polymorphonuclear neutrophil.</p>	 <p>Trichomonas Yeast buds PMN Squamous epithelial cells</p>
Gram stain		 <p>ASM MicroLibrary.org © Woodhead</p>	 <p>ASM MicroLibrary.org © Pfizer Inc. Trophozoites + pus cell</p>

	PH	Whiff test	Gram stain / Wet prep	Culture	Immunologic/ molecular test
<b>Bacterial Vaginosis</b>  diagnosis of bacterial vaginosis: 3 out of 4 of these criteria: • pH greater than 4.5. • Positive Whiff test. • clue cells. • Homogenous discharge.	> 4.5	+++	Clue cells (Epithelial cells covered by bacteria)  	Not helpful	DNA Probe (Gardnerella vaginalis)
<b>Candida vaginitis</b>	< 4.5	-	Yeast & pseudohyphae.  	Candida	DNA Probe
<b>Trichomonas vaginalis</b>	> 4.5	+ -	   <p>Trichomonas vaginalis</p>	"swimming" Motile Trophozoites	EIA enzyme immunoassay DNA Probe

- Base on the finding, what is the most likely diagnosis?

trichomonas vaginitis.

- Briefly outline the management this case?

**Management:**

- Metronidazole
- Husband should be treated
- screen the partner and screening for other sexually transmitted diseases.
- Patient Counselling and Education.

- What are the organisms that you would like to screen for in any patient presented with any STD?

- HIV
- Herpes
- syphilis
- **the twins:** neisseria gonorrhoeae and chlamydia trachomatis. TB and brucella
- hepatitis B & hepatitis C.

- As summary:

	Bacterial vaginosis	Candida vulvovaginitis	Trichomoniasis
Etiology	<i>Gardnerella vaginalis</i> or <i>Mycoplasma hominis</i> .	funal ( <i>Candida albicans</i> )	parasite ( <i>trichomonis vaginilis</i> )
Clinical Features	<ul style="list-style-type: none"> <li>- <b>minimal</b> Itching and burning</li> <li>- <b>no</b> Pruritus &amp; inflammation</li> <li>- <b>rare</b> Dyspareunia &amp; Dysuria</li> </ul>	<ul style="list-style-type: none"> <li>- Irritation, pruritus, soreness. - satellite lesions &amp; erythema.</li> <li>- Dyspareunia &amp; Dysuria.</li> </ul>	<ul style="list-style-type: none"> <li>- may be <b>asymptomatic</b>.</li> <li>- Pruritus, strawberry cervix -Dyspareunia &amp; Dysuria</li> </ul>
Vaginal discharge	<ul style="list-style-type: none"> <li>- Thin, <b>Milky</b> (white or grey).</li> <li>- <b>Fishy smelling</b> : (specially <b>after</b> sexual intercourse and menses).</li> </ul>	<ul style="list-style-type: none"> <li>- Thick, curdy, white (like <b>cottage cheese</b>)</li> <li>- Odorless</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Purulent yellow - green</b> to gray, sometimes <b>frothy</b>.</li> <li>- Malodorous smelling</li> </ul>
Diagnosis	<p><b>1- Gram Stain → Gold Standard</b></p> <p><b>2- 3 out of 4</b> of these criteria:</p> <ol style="list-style-type: none"> <li>1. PH greater than <b>4.5</b></li> <li>2. <b>Fishy odor</b>. (+ve Whiff test)</li> <li>3. Any <b>clue cells</b> in Wet Mount</li> <li>4. Homogenous discharge</li> </ol> <p>- Culture is not helpful.</p>	<p><b>1- Wet prep</b> to see <b>clumps of pseudohyphae</b> . or Budding yeast and no pseudohyphae in patients with <b><i>C glabrata</i></b> .</p> <p><b>2-</b> KOH prep helpful but not always necessary.</p> <p><b>3-</b> pH &lt;4.5 (=normal).</p> <p><b>4-</b> culture.</p>	<p><b>1- Culture → gold standard</b></p> <p>Its disadvantages include cost &amp; prolonged time before diagnosis.</p> <p>2- pH &gt; 4.5</p> <p><b>3- wet mount:</b> organism has flagella.</p> <p>4- culture .</p>
Treatment	<b>Metronidazole</b>	<b>fluconazole</b>	<b>Metronidazole</b>

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We wish you the best of luck!  
اللَّهُمَّ اجْعَلْ خَيْرَ أَعْمَالِنَا خَوَاتِيمَهَا

