

Chlamydia, Syphilis and Gonorrhea

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دعاء قبل المذاكرة

(اللهم إني أسألك فهم النبيين و حفظ المرسلين و الملائكة
المقربين، اللهم اجعل ألسنتنا عامرة بذكرك و قلوبنا بخشيتك،
إنك على كل شيء قدير و حسبنا الله و نعم الوكيل)

Chlamydia

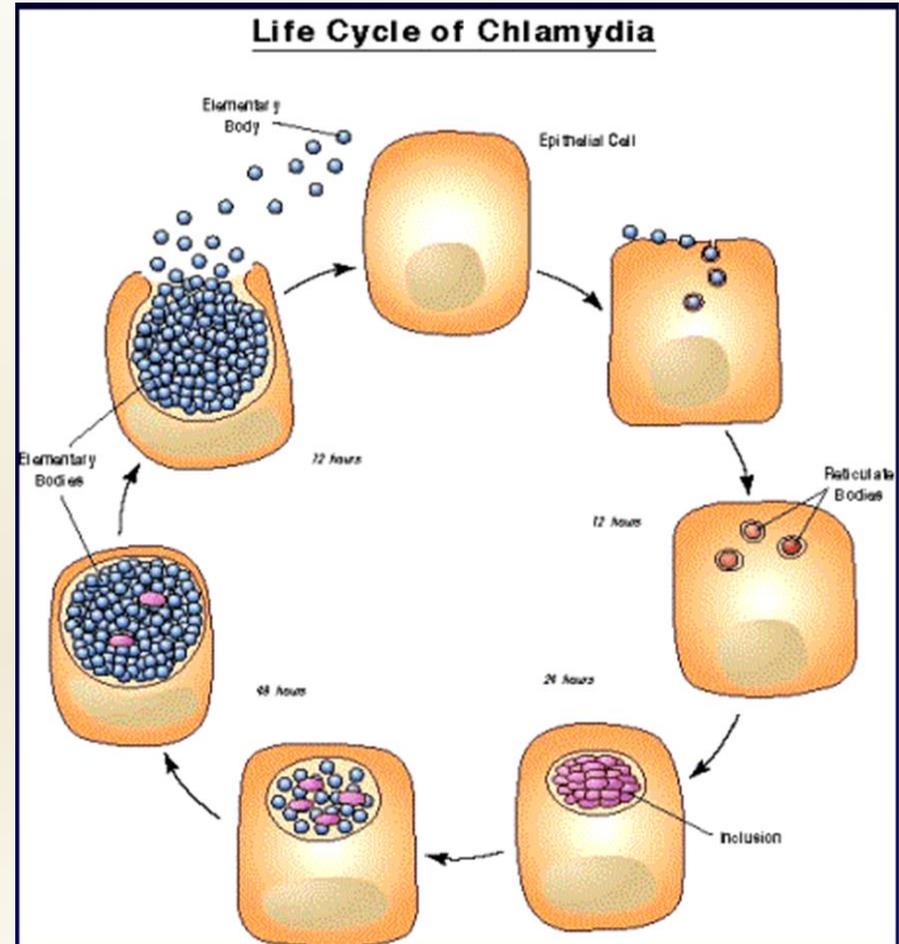
It used to be called a virus because it grows intracellular but they changed it to bacteria because it contains **DNA** and **RNA**, and treated by **antibiotic**.

An obligate intracellular bacteria (live and grow inside the cell) with elements of bacteria **but no rigid cell wall**.

Fail to grow on artificial media (we diagnose it by microscopy)

Uses host cell metabolism for growth and replication.

Image of **inclusion bodies**: are group of bacteria which are metabolically active and non infectious.



Chlamydia species ❖

Species	Type	Disease
C. trachomatis	A,B,C	Trachoma
C. trachomatis	D - K	Inclusion conjunctivitis, genital infection
C. trachomatis	L1, L2, L3	Lymphogranuloma venereum (LGV). (Chronic infection leads to abscesses, strictures and fistulas).
C.psittaci		Psittacosis (from birds especially parrots)
C.pneumoniae		Respiratory infections (cause atherosclerosis)

Epidemiology: ❖

C.trachomatis is a common cause of sexually transmitted disease (STD). ➤

Spread by genital secretions , anal or oral sex. ➤

Wide spread, 5-20 % among STD clinic in USA. ➤

Human are the sole reservoir . ➤

1/3 of male sexual contacts of women with *C.trachomatis* cervicitis develop urethritis after 2-6 weeks incubation period. ➤

Pathogenesis: ❖

Chlamydia have tropism for epithelial cells of endocervix and upper genital tract of women, urethra, rectum and conjunctiva of both sexes. ✓

LGV can enter through skin or mucosal breaks ✓

Release of proinflammatory cytokines, leads to tissue infiltration by inflammatory cells, progress to necrosis, fibrosis then scarring. ✓

Genital infections caused by *C.trachomatis*

In men

- urethritis (non gonococcal urethritis (NGU)) , epididymitis & proctitis.
- Urethritis present as dysuria and thin urethral discharge in 50 % of men.

In women

- cervicitis, salpingitis, urethral syndrome, endometritis & proctitis.
- Uterine cervix infection may produce vaginal discharge but is **asymptomatic** in 50-70% of women.
- Salpingitis and pelvic inflammatory disease can cause sterility and ectopic pregnancy.
- 50% of infants born to mothers excreting *C.trachomatis* during labor show evidence of infection during the first year of life. Most develop inclusion conjunctivitis, 5-10% develop infant pneumonia syndrome.

Diagnosis of Chlamydia genital infections:

1-Polymerase chain reaction (PCR) or Ligase chain reaction (LCR): **are the most sensitive methods of diagnosis**. Performed on vaginal ,cervical , urethral swabs, or urine .

2-Isolation on tissue **culture (McCoy cell line)** but it is *rarely done*. Important to know

3-*C.trachomatis* inclusions can be seen by **iodine or Giemsa stained smear**.

Treatment & Prevention:

Azithromycin single dose for non- LGV infection.

Erythromycin for pregnant women.

Doxycycline for LGV.

Prevention and control through early detection of asymptomatic cases , screening women under 25 years to reduce transmission to the sexual partner. ■

Gonorrhoea

Rates among adolescents are high, about 10% increase per year in USA .

- Inability to detect asymptomatic cases such as women and patient fail to seek
- medical care hampers control .
- Major reservoir for continued spread are asymptomatic cases.
- Nonsexual transmission is rare.
- A STD disease acquired by direct genital contact.
- It is localized to mucosal surfaces with infrequent spread to blood or deep tissues.

Caused by Neisseria gonorrhoeae.

Clinical manifestations:

- Incubation period = **2-5 days** .
- **Men:** acute urethritis and acute profuse purulent urethral discharge,
- **Women:** mucopurulent cervicitis, urethritis with discharge.
- **In both sexes:** urethritis ,proctitis.

Symptoms: similar to Chlamydia infection + Pharyngitis may occur in both sexes and Pelvic inflammatory disease (PID) in women

Pelvic inflammatory disease (PID):

PID occurs in 10-20% of cases, including fever, lower abdominal pain, adnexal tenderness, leukocytosis with or without signs of local infection.

Salpingitis and pelvic peritonitis cause **scarring and infertility**.

Disseminated gonococcal infection (DGI) **due to spread to the bloodstream**.

Disseminated gonococcal infection (DGI):

Due to spread of the bacteria to the **bloodstream**.

Clinically:

- Fever,
 - migratory arthralgia and arthritis.
 - Purulent arthritis involving large joints,
 - Petechial, maculopapular rash.
- Metastatic infection such as Endocarditis , Meningitis & Perihepatitis may develop.

Neisseria Gonorrhoea

A Gram negative diplococci grows on chocolate agar and on selective enriched media and CO2 required. **Not a normal flora**.

Pathogenesis:

Mainly a localized infection of epithelium ,leads to intense inflammation.

Posses pili and outer membrane proteins that mediate attachment to non-ciliated epithelium.

Invasion by IA and Opa proteins (types of proteins found on the surface of the outer membrane. Used from the bacteria to enter the epithelium cells) .

gonorrhoea

Diagnosis

- #Transport media required unless transfer to the lab. is immediate.
- #Direct smear for Gram stain of urethra and cervical specimens to **see Gram negative intracellular diplococci** , more sensitive in men .
- #Culture on **Thayer-Martin** or other selective medium.
- #Isolates identified by sugar fermentation of glucose only (does not ferment maltose or sucrose) or Coagglutination test.

Treatment

- #Guided by local resistance pattern and susceptibility testing. Partner should be treated as well.
- #**Ceftriaxone IM** (or oral Cefixime recommended).
- #**Ciprofloxacin** or Ofloxacin
- #**Azithromycin, Doxycycline** (orally for 7 days) both cover C.trachomatis infection as well .
- #Counselling.

Syphilis

- Syphilis: A chronic systemic infection , sexually transmitted , caused by a spiral organism called **Treponema pallidum**.
- An exclusively human disease.
- Transmission by contact with mucosal surfaces or blood, less commonly by nongenital contacts with a lesion, sharing needles by IV drug users, or transplacental transmission to fetus.
- Early disease is infectious** but late disease is not infectious.
- The organism grow on cultured mammalian cells only , not stained by Gram stain but readily seen only by **immunofluorescence (IF)**, **dark field microscopy** or **silver impregnation histology technique**.

Epidemiology

- Syphilis is believed to have infected 12 million people in 1999 with greater than 90% of cases in the developing world.
- It affects between 700,000 and 1.6 million pregnancies a year resulting in spontaneous abortions, stillbirths, and congenital syphilis. In Sub-Saharan Africa syphilis contributes to approximately 20% of perinatal deaths.

Pathogenesis

- Bacteria access through in-apparent skin or mucosal breaks.
- Slow multiplication produces endarteritis (inflammation of the inner lining of an artery) & granulomas.
- Ulcer heals but spirochete¹ disseminates.
 - Latent periods may be due to surface binding of host components.
- Injury is due to delayed hypersensitivity responses to the persistence of the spirochetes.

Stages of syphilis

1

Primary syphilis

- it is a painless, indurated ulcer with firm base and raised margins on external genitalia or cervix , anal or oral site appear after an Enlarged inguinal lymph nodes may persist for months.
- incubation period of about 2-6 weeks .
- Lesion heals spontaneously after 4-6 weeks.

2

Secondary syphilis

- Characterized by symmetric mucocutaneous rash , mouth lesions (snail track ulcers) and generalized non-tender lymph nodes enlargement (full of spirochete) with bacteremia causing fever, malaise and other systemic manifestations.
- Skin lesion distributed on trunk and extremities often palms, soles and face.
- 1/3 develop condylomata lata: which are painless mucosal warty erosions on genital area and perineum.
- Develops 2-8 weeks after primary lesion healed. Secondary lesion resolve after few days to many weeks but disease continue in 1/3 of patients. Disease enter into a latent state.

3

Tertiary syphilis

- Neurosyphilis: chronic meningitis, with increased cells and protein in CSF, leads to degenerative changes and psychosis.
- Demyelination causes peripheral neuropathies.
- Most advanced cases result in paresis (personality, affect, reflexes, eyes, senorium, intellect, speech) due to the effect on the brain parenchyma and posterior columns of spinal cord and dorsal roots (tabes dorsalis).
- in 1/3 of untreated cases. Manifestations may appear after 15-20 years or may be asymptomatic but serological tests positive.

Clinical manifestation of syphilis

#Latent syphilis:

- Happens after secondary lesion resolves and before tertiary stage starts to appear.
- A stage where there is no clinical manifestations but infection evident by serologic tests, Relapse cease.
- Risk of blood-borne transmission or from relapsing infection or mother to fetus continue.

#Cardiovascular syphilis:

- Due to arteritis leads to aneurysm of aorta and aortic valve ring.
- Localized granulomatous reaction called gumma on skin, bones, joints or other organs leads to local destruction.

#Congenital syphilis:

- Develop if the mother not treated, fetus susceptible after 4th month of gestation.
- Fetal loss or congenital syphilis result.
- Rhinitis, rash and bone changes (saddle nose, saber shine), anemia thrombocytopenia, and liver failure.

Diagnosis

IgM used to diagnose congenital syphilis.

Dark field microscopy of smear from primary or secondary lesions. May be negative

serology tests :
(commonly used)

1. Nontreponemal tests

POSITIVE during primary stage , screening, follow up therapy

(RPR & VDRL)

- antibody to cardiolipin (lipid complex extracted from beef heart) called reagin .
- The tests are called rapid plasma reagin (RPR) and venereal disease research laboratory (VDRL).
- Become positive during the primary stage (possible exception HIV) , antibody peak in secondary syphilis. Slowly wane in later stages.

Used for screening and titer used to follow up therapy.

2. Treponemal tests

POSITIVE at all stages , confirm RPR & VDRL

(FTA-ABS) & (MHA-TP)

Fluorescent treponemal antibody (FTA-ABS) .
Microhemagglutination test(MHA-TP) (antigen attached to erythrocytes)

Positive results confirm RPR and VDRL.

Treatment

Treponema is sensitive to Penicillin.

Hypersensitive patients treated with Tetracycline, Erythromycin or Cephalosporins

Prevention: counselling

Note

Dark field microscopy is preferable in primary stage only, while serology is preferable in the other stages.

- Syphilis, Chlamydia and Gonorrhoea are the main STDs, caused by delicate organisms, cannot survive outside the body.
- Infection may not be localized.
- Clinical presentation may be similar (urethral or genital discharge, ulcers).
- One or more organisms (Bacteria, Virus, Parasite) may be transmitted by a sexual contact.
- Screening for HIV required.

If not treated early may end in serious complications.

- Syphilis is exclusive human disease

Secondary Syphilis is most infectious but primary Syphilis is the most transmitted by sex.

dr's notes

MCQs

1- Gonorrhoea is caused by:

- A- Gram +ve diplococci
- B- Gram -ve bacilli
- C- Gram +ve bacilli
- D- Gram -ve diplococci

2-which of the following can cause Psittacosis:

- A- Dog
- B- cat
- C- Parrot
- D- Fish

3-which infection is most infectious:

- A- primary
- B- secondary
- C- tertiary
- D- none of them

SAQs

1-which drug cannot be used for treatment of chlamydia, and why?

Ans: penicillin, because it works on the cell wall and chlamydia doesn't have cell wall.

2-mention the treatment of chlamydia, gonorrhoea and syphilis respectively?

Ans:

A-Chlamydia: Azithromycin single dose for non-LGV infection, Erythromycin for pregnant women, Doxycycline for LGV.

B-Gonorrhoea: Ceftriaxone IM (or oral Cefixime recommended), Ciprofloxacin or Ofloxacin, Azithromycin, Doxycycline (orally for 7 days).

C-Syphilis: sensitive to Penicillin, hypersensitive patients treated with Tetracycline, Erythromycin or Cephalosporins

Ans: 1-D 2-C 3-A

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الوكيل)