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**Sexually Transmitted Infections (STIs)**

**Definition:**

 STIs are a diverse group of infections caused by biologically dissimilar microbial agents, transmitted by sexual contact (usually illegal).

**Terminology:**

 The term sexually transmitted infections (**STIs**) has been preferred than sexually transmitted diseases (**STDs**) in the recent years, because a person may be infected, and may potentially infect others, without showing signs of a disease.

While in the past, these illnesses have mostly been referred to as venereal diseases (**VD**) (from the Latin name Venus; the Roman goodness of love).

**Epidemiology:**

• STIs are most common in young, sexually active people.

• The STIs remain common infections with considerable underreporting.

• STIs are more common in male (symptoms and signs in men more obvious, social aspect, and men may have more sexual partners than women), and more serious in females (more serious complications).

**Control and Prevention:**

Good control of STIs is based on a number of important principles, include:

1. Early and accurate diagnosis.
2. Early and effective treatment.
3. Investigations to establish cure before resumption of sexual activity.
4. Counseling around safer sexual practice.
5. STIs screening for all risk groups (sex workers, men homosexual, injecting drug abusers).
6. STIs appear to travel together, so a patient presented with one STI should be screened carefully for others (co-prevalence).
7. Condoms: prevent some STIs as GC, and decrease the chance to get others as warts.
8. Vaccines: recently pre-exposure vaccines (Gardasil® and Cervarix®) are effective methods to prevent transmission of HPV.
9. Nonoxynol-9: it is a vaginal microbicide was hoped to decease STIs rates.

**Prevention of STIs in Islam:**

**(1)** Proper selection of future wife and husband. **(2)** Circumcision (decreased the risk of STIs, penile cancer, and cervical cancer in partner). **(3)** Inhibition of sexual excitement. **(4)** Bathing after coitus. **(5)** No intercourse during menses and purpereum (the congested mucosa is a good media for bacterial infection). **(6)** Prohibition of extra-marital relations. **(7)** Prohibition of anal sex. **(8)** Prohibition of homosexual relations.

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**The Causative Agents:**

1. **Bacterial:**

*Niesseria gonorrhoeae* (gonorrhea).

*Chlamydia trachomatis* (non-gonococcal urethritis).

*Treponema pallidum* (syphilis).

*Haemophilus ducreyi* (chancroid).

*Klebsiella granulomatis* (granuloma inguinale).

1. **Fungal:**

 Candidiasis.

1. **Viral:**

*HPV* (genital warts).

*Molluscipox* *virus* (MC).

*HHV* 1 and 2 (herpes genitalis).

*Hepatitis virus* (mostly hepatitis B, hepatitis C is rarely sexually transmissible).

*HIV* (AIDS).

1. **Parasitic:**

*Phthirus pubis* (pediculosis), which is the most contagious STIs.

*Sarcoptes scabiei* (scabies).

1. **Protozoal:**

*Trichomonas vaginalis* (trichomoniasis).

**Clinical Presentation:**

**1. Discharge.**

**2. Ulcer.**

**3. Mass (papules and/or nodules):**

Genital warts (condylomata acuminata), syphilis (condylomata lata) and MC.

**4. Pruritus:**

Scabies, pediculosis pubis, trichomonal vaginitis and candidal vaginitis.

**5. Systemic manifestations:**

Some STIs may present with generalized or systemic manifestations, included:

**•** Syphilis: generalized rash, lymphadenopathy, neurological or cardiac manifestations. **•** Hepatitis: jaundice, and hepatomegally.

**•** Disseminated gonococcal infection: fever, rash, and arthritis.

**•** AIDS: exanthem, xeroderma, folliculitis, diarrhea, pneumonia, and kaposi sarcoma.

**Complications:**

1. Pregnancy complications: (ectopic pregnancy and miscarriage).
2. Newborn complications: (prematurity, congenital and neonatal infections).
3. Infertility: mostly in female (fallopian tube obstruction).
4. Urethral stricture: due to gonococcal urethritis.
5. Malignancy: mostly cervical and very rarely penile carcinoma (SCC).

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**Genital Discharge**

**Causes:**

**A**- **Urethral discharge:** gonococcal urethritis, and non gonococcal urethritis.

**B**- **Vaginal discharge:**

ST causes: candidal vaginitis, and trichomonal vaginitis.

Non ST causes: physiological (ovulation), cervical erosions, and tumors (vaginal, uterine or fallopian tube).

**Gonococcal Urethritis (Gonorrhea)**(GC)

**Microbiology:**

 Gonorrhea is caused by *Niesseria gonorrhoeae*,which is intracellular (inside the neutrophil), gram negative, kidney shape, diplococci (typically appear in pairs). It has a short incubation period (**2-5 days**).

**Pathogenesis:**

*N. gonorrhoeae* primarily infects the columnar epithelium (urethra, and cervix in mature women, and the vagina in pre-pubertal girls, also the pharynx, conjunctiva and rectum). *N. gonorrhoeae* attaches to columnar epithelial cells via pilli or fimbriae. Outer membrane proteins on the bacteria aid in attachment and local invasion.

**Epidemiology:**

Gonorrhea is the **commonest cause** of genital discharge and urethritis in Iraq and other developing countries, followed by *Chlamydia trachomatis* infection (the reverse in developed countries).

**Clinical Features:**

**Male** (usually symptomatic): characterized by purulent urethral discharge and burning urination. Physical examination typically reveals **purulent (yellowish)** urethral exudates, usually appear spontaneously but sometimes only expressed by compression of the urethra. Erythema of the meatus sometimes is present.

**Female** (usually asymptomatic): the primary site of infection in women is the endocervical canal causing cervisitis. When symptoms are present, the dominant one is vaginal discharge, dysuria also is frequent. The physical examination may be normal, but many women have evidence of cervisitis, with purulent or mucopurulent exudate and often with edema and easily induced bleeding (friability).

**Complications:**

**A**- **Genital:**

**Female:**

**1.** Pelvic inflammatory disease (PID): the **most common** complication of gonorrhea in women (10-20% of infected women).

**2.** Infertility (due to fallopian tube scarring).

**3.** Ectopic pregnancy (due to fallopian tube scarring).

**4.** Bartholin gland infection and abscess.

**5.** Skene glands infection (these glands are located at the sides of the female urethra).

**6.** Periurethral abscess.

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**Male:**

**1.** Prostatitis, epididymitis, and cystitis.

**2.** Periurethral abscess and urethral stricture.

**3.** Infertility (very rare).

**4.** Infection of the Tyson's glands (located at both sides of the urethra).

**5.** Infection of the Litter's glands (located at the anterior part of the urethra).

**6.** Infection of the Cowper's glands (located at the base of prostate).

**B**- **Extragenital:**

**1.** Disseminated gonococcal infection (DGI): more in women and it is usually manifested by various combinations of polyarticular tenosynovitis, dermatitis (few papules and pustules limited to the extremities), and septic arthritis.

**2.** Conjunctivitis: neonatal conjunctivitis (ophthalmia neonatorum) via vertical transmission, was a common cause of blindness. gonococcal ophthalmia occasionally are seen in adults, usually as a result of autoinoculation.

**3.** Rectal infection: mostly subclinical.

**4.** Pharyngeal infection: results from orogenital exposure.

**Diagnosis:**

 The diagnosis of gonococcal infection is suspected clinically, confirmed by smear, and made definitely by culture or PCR.

**1.** **Smear:** intracellular (neutrophil) gram negative diplococci.

**2.** **Culture:** can be performed on modified Thayer-Martin media.

**3.** **PCR:** more sensitive than culture.

**•** Two glass urine test: used for localization of infection rather than for diagnosis.

After voiding, the first part of urine is transfer in to glass number 1 and the second part into glass number 2 (transparent glasses), then both glasses inspected, turbidity in glass 1 indicates anterior urethral infection and in glass2 indicates posterior urethral infection.

**•** Two catch urine test: the same principle but we do GUE for each part instead of naked examination (more than 8 pus cells in HPF indicates infection).

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**Non GC Urethritis**

Nongonococcal urethritis (NGU) is diagnosed when gram negative, intracellular, diplococci organisms *(N. gonorrhoeae*) cannot be detected on microscopic examination (Diagnosis by exclusion of GC urethritis).

**Causes:**

**A**- **Infectious:**

**I**- Chlamydial urethritis: the **most common** cause of non GC urethritis (25%-55%).

**II**- Non chlamydial urethritis, which include:

1. Bacteria: *ureaplasma urealyticum*, *E.coli* and *Proteus*.
2. Viral: intraurethral herpes simplex or intraurethral warts.
3. Fungal: as candidiasis.
4. Protozoal: *Trichomonas vaginalis*.

**B**- **Noninfectious:**

1. Drug allergy.
2. Food (spicy food).
3. Chemical (overuse of detergent and antiseptic).

**C**- **Idiopathic (true) urethritis**.

**Chlamydial Urethritis**

*Chlamydia trachomatis* is non motile, gram negative, intracellular organism, have midway features between virus and bacteria.

**Diagnosis:**

**Serological tests**: as complement fixation test.

**PCR**: have largely replaced culture (cellular culture) which is the historic gold standard for chlamydia diagnosis.

**Clinical features:**

Compared with GC urethritis:

**1.** It has longer incubation period (**7-28 days**).

**2.** More gradual presentations.

**3.** The discharge is fewer and thicker, mucoid or purulent, whitish in color, and may cause sticky urethral meatus.

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**Management of Urethritis (Urethral Discharge):**

**History:** symptoms, sexual history, type of contraception, and drug and food history.

**Examination:** type of discharge, meatal erythema.

**Investigation:** GUE, smear, culture and PCR.

**Treatment:**

**A-** **Treatment of urethritis:**

• GC urethritis: single dosage of any of the following: ceftriaxone (125mg IM), cefixime (400mg PO), ciprofloxacin (500mg PO).

• Chlamydial urethritis: azithromycin (1g as a single oral dose), or doxycycline (100 mg orally twice a day) for 7 days.

• We should treat the patient and his sexual partner(s) (continuous exposure to the infected partner often results in re-infection of the index case).

• We should use dual therapy for possible co-infections (gonococcal and chlamydial infections), because most patients are often co-infected with both pathogens.

**B-** **Treatment of recurrent and persistent urethritis:**

Metronidazole (2g as a single oral dose), plus erythromycin (500mg orally 4 times a day) for 7 days.

**C-** **Treatment of complications:** (generally larger doses and longer courses)

**•** Acute PID: single dose of ceftriaxone (250mg IM), followed by doxycycline (100mg twice daily), with or without metronidazole (500mg twice daily) for 14 days.

**•** DGI: should be hospitalized and treated with a parenteral third generation cephalosporin, such as ceftriaxone. Oral treatment usually can be substituted after improvement begins.

**•** GC conjunctivitis: single dose of ceftriaxone (1g IM in adults, and 25 to 50 mg/kg IV or IM in neonate), with saline irrigation.

" Best Regards "

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