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Introduction to Sexually Transmitted Infections (STIs); Syphilis

Definition

The sexually transmitted infections (STIs; earlier k/a STDs or VDs) are a group of communicable infections / diseases that are transmitted by sexual contact & caused by a wide range of bacterial, viral, protozoal, fungal agents & ectoparasites

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Transformation in STIs

- List of pathogens which are sexually transmitted has expanded from *'5 classical'* venereal diseases (VDs) to include more than 20 agents including viral infections
- Shift to *clinical syndromes* associated with STIs

Classification of STI agents

1. Bacterial Agents

- *Treponema pallidum* - Syphilis
- *Haemophilus ducreyi* - Chancroid
- *Calymmatobacterium granulomatis* - Donovanosis
- Bacterial Vaginosis - caused by various microbial agents
- *Neisseria gonorrhoea* - Gonococcal Urethritis and other manifestations
- *Chlamydia trachomatis* – Non-Gonococcal Urethritis (NGU)
- *Mycoplasma hominis* - NGU
- *Ureaplasma urealyticum* - NGU

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Classification of STI agents

2. Viral Agents

- *Herpes simplex virus* 2 or 1 (HSV 2 & 1) - Herpes genitalis
- *Hepatitis B virus*
- *Human Papilloma Virus* - Warts
- *Molluscum Contagiosum Virus*- Molluscum Contagiosum
- *Human Immunodeficiency Virus (HIV)* - AIDS

Classification of STI agents

3. Protozoal agents

- *Entamoeba histolytica* – Amoebiasis
- *Giardia lamblia* – Giardiasis
- *Trichomonas vaginalis* – Vaginitis

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Classification of STI agents

4. Fungal agents

- *Candida albicans* - Candidal Vaginitis

5. Ectoparasites

- *Phthirus pubis* - Pediculosis
- *Sarcoptes scabiei* - Scabies

History

- General history (Demography)
- Contact of an STI
- Onset, character, periodicity, duration & relation to sexual intercourse & urination
- Anogenital discharge / dysuria / hematuria
- Dyspareunia / pelvic pain
- Ulcers, lumps, rashes or itching

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History

- Past medical and STI history
- Medications, allergies (emphasise antibiotics) & contraception
- Any STI in sexual partner(s)
- Last menstrual period
- Vaccination history
- Obstetric history (h / o abortions)
- Any history of injecting drug abuse, what drug, how often
- Any history of tattooing or blood product exposure

Sexual History

- Number of exposure (Single, multiple)
- Number of sexual partner(s)
- Date of last sexual exposure
- Sex of partner(s) and history of male to male contact (MSM)
- Type of intercourse – oral, vaginal, anal
- Protected / unprotected exposure

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History for HIV

- H/o Recurrent diarrhoea
- H/o Fever
- H/o Loss of weight
- H/o Genital ulcer disease
- H/o Blood transfusion
- H/o Herpes zoster
- H/o Opportunistic infections

Examination

- Exposure of abdomen, genitals and thighs is required

Inspect for:

- Rashes
- Lumps
- Ulcers
- Discharge
- Smell

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Examination

Inspect for:

- Pubic hair for lice & nits
- Skin of the face, trunk, forearms, palms & the oral mucosa
- Palpate: Lymph nodes

Examination - Men

Inspection:

- Penis
- External meatus
- Retracted foreskin
- Perianal area
- Lymph nodes examination
- Per-rectal (P / R) examination
- Palpation of scrotum & expression of any discharge from the urethra.
- Proctoscopy

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Examination - Women

Inspection:

- External genitalia
- Perineum
- Perianal area
- Lymph nodes examination
- Speculum examination of vagina & cervix
- Bimanual pelvic examination
- Oral cavity

Systemic Examination

- Cardiovascular
- Respiratory
- Gastrointestinal (liver, spleen)
- Central Nervous
- Urinary
- Musculoskeletal

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Syphilis

- Caused by *Treponema pallidum* subsp. *pallidum*
- *T. pallidum* - a fine, motile, spiral organism, measuring 6-15 µm in length & 0.09 to 0.18 µm in thickness with characteristic motility
- It has regular spirals which helps in differentiating from other non-pathogenic treponemes
- Cannot be grown on culture media

Transmission

Moderate to high probability of transmission:

- Sexual contact
- Infected blood
- Trans-placental route
- Accidental to medical personnel

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Pathogenesis

Infection

↓

Attachment to host cells

↓

Corkscrew movement & travel to lymph nodes

↓

In perivascular lymphatics cause endarteritis obliterans

↓

Loss of blood supply

↓

Genital ulcer

Primary syphilis

- Stage from infection to the healing of the chancre
- Incubation period- 9-90 days

After this time there is ulcer formation

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Primary syphilis

- Single, painless, well-defined, 'Hunterian' ulcer with clean looking granulation tissue on floor
- Indurated, button-like
- Hard chancre - heals with scar even *without* treatment

Primary syphilis

Sites of ulcer

- Genital (90-95%)

  Coronal sulcus, glans, frenulum, prepuce, shaft of penis in male

  Cervix, labia, vulva, urethral orifice in females

- Extra-genital (5-10%):

  Commonest site is the lips

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Diagnosis

Combination of clinical & Laboratory investigation

- DGI-serum from ulcer / aspirate from lymph node

- VDRL / RPR- Negative till one week after appearance of ulcer.

Positive by 4 weeks

Natural History

Gjestland (1955)- a follow-up study of 1147 cases (the Oslo study)

- 24% -mucocutaneous relapses
- 11% died of syphilis
- 16% - benign late manifestations (usually cutaneous) nodules or gummata
- 10% cardiovascular syphilitic lesions
- 6% - neurosyphilis.
- Conclusion: Long before penicillin was introduced, at least 60% of people with syphilis lived & died without developing serious symptoms (Rook's 2010)

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Secondary Syphilis

- 6-8 weeks after appearance of primary chancre
- Systemic disease
- Constitutional features like sore throat, malaise, fever & joint pain may accompany the lesions

Secondary Syphilis

- Common signs are:
  - Skin rash (75-100%)
  - Lymphadenopathy (50-86%)
  - Mucosal lesions (6-30%)

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Secondary Syphilis

Cutaneous:

- Non-itchy lesions generally
- Macular, papular, nodular, pustular, annular lesions may occur
- Condyloma lata
- Split papules at angles of mouth
- Corona veneris
- Moth eaten alopecia
- Mucosal lesions - mucous patches (snail-track ulcers)
- The 'great-imitator'

Diagnosis

- VDRL / RPR - Almost always positive
  - False negative (in some cases)
  - False positive (in some cases)
- Specific tests: TPHA / TPPA may remain reactive throughout the life

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Latent syphilis

- Persistent seropositivity with clinical latency
- Following resolution of primary or secondary stage latency occurs & continues as such in 60-70% of patients
- Less than 2 years: Early
- More than 2 years: Late

Tertiary Syphilis

- After a period of latency of up to 20 years, manifestations of late syphilis can occur

Cutaneous

Characteristic lesion is the gumma

- A deep granulomatous process involving the epidermis secondarily
- Causes punched out ulcerative lesions with white necrotic slough on the floor
- On lower leg, scalp, face, sternal area

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Tertiary Syphilis

Cardio-vascular:

Develops 10-30 years after infection - so in middle / old age; more in men

- Aortitis (ascending aorta)
- Aortic aneurysm → sudden death due to rupture
- Coronary ostial stenosis

Tertiary Syphilis

Neuro-syphilis:

- In any patient with syphilis, CSF lymphocytosis, an elevated CSF protein level or a reactive VDRL test would suggest neuro-syphilis & must be treated
- *Asymptomatic neurosyphilis*
- *Meningeal neurosyphilis* -usually has its onset during secondary disease; characterized by symptoms of headache, confusion, nausea & vomiting, neck stiffness & photophobia. Cranial nerve palsies cause unilateral or bilateral facial weakness & sensorineural deafness

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- *Meningovascular syphilis* - occurs most frequently between 4 and 7 years after infection. The clinical features of hemiparesis, seizures & aphasia reflect multiple areas of infarction from diffuse arteritis.
- *Gummatous neurosyphilis* - results in features typical of a intracranial ***space-occupying*** lesion.

- *Parenchymatous syphilis* : general paralysis (GPI) from parenchymatous disease of the brain used to occur 10–20 years after infection. The onset is insidious with ***subtle deterioration in cognitive function*** & ***psychiatric symptoms*** that mimic those of other mental disorders.

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- *Tabetic neurosyphilis* was the most common form of neurosyphilis in the pre-antibiotic era, with an onset 15–25 years after primary infection. The most characteristic symptom is of ***lightning pains- sudden paroxysms of lancinating pain*** affecting the lower limbs.
- Other early symptoms include paraesthesia, progressive ataxia, & bowel & bladder dysfunction.

Treatment of Syphilis & STIs

- CDC guidelines: updated regularly and reviewed thoroughly every 4 years
- Others:
  - WHO
  - NACO

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Syphilis treatment

Primary, Secondary, Early Latent

- Recommended regimen (CDC)

  Inj. Benzathine Penicillin G,

  2.4 million units IM stat after test dose

Treatment
Late Latent Syphilis

- Recommended regimen

Inj. Benzathine penicillin G 2.4 million units IM AST at one week intervals x 3 doses

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Neurosyphilis

- Recommended regimen

Aqueous crystalline penicillin G, 18-24 million units daily administered as 3-4 million units IV every 4 hours for 10-14 days

Alternative regimen for penicillin allergic patients

- Doxycycline (100 mg) BD
- Erythromycin (500mg) QDS
- Tetracycline (500mg) QDS

Duration of treatment

- Early syphilis : 15 days
- Late syphilis : 30 days

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- Pregnancy: Only penicillin G
- If patient allergic: desensitize

- CDC: Guidelines (Dr G. O. Wendel, Jr., *et al.* N Engl J Med. 1985)

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The Jarisch-Herxheimer reaction

- The Jarisch-Herxheimer reaction is an acute febrile reaction frequently accompanied by headache, myalgia, fever, & other symptoms that can occur within the first 24 hours after the initiation of any therapy for syphilis.
- Antipyretics can be used to manage symptoms
- The reaction might induce early labor or cause fetal distress in pregnant women, but this should not prevent or delay therapy

Thank you

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