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Agents of other sexually transmitted diseases (STD)

The 8th lecture for 3rd-year students of dentistry
8th December, 2010

Classical venereal infections – revision

- **Gonorrhoea (rudely: the clap)**
  Neisseria gonorrhoeae
- **Syphilis (in Central Europe also: lues)**
  Treponema pallidum
- **Chancroid (soft chancre, ulcus molle)**
  Haemophilus ducreyi
- **Lymphogranuloma venereum**
  ***Chlamydia trachomatis* serotypes L_1, L_2, L_{2a}, L_3**

GO: infections of the lower UGT – revision

urethritis

cervicitis

urethritis

bartholinitis

inflammation of Skene s glands

GO: infections of the upper UGT – revision

epididymitis (mind the orthography: i-i– y –i-i)

endometritis

from salpingitis up to adnexitis (PID = pelvic inflammatory disease) → sterility!

GO: other localized infections – revision

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proctitis

pharyngitis

blenorrhoea neonatorum

peritonitis (Fitz-Hugh syndrome)

perihepatitis (Curtis syndrome)

GO: disseminated infections – revision

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- affliction of skin (pustulae), joints (purulent arthritis of wrist, knee or ankle) and sinews (tendosynovitis)
- monoarticular septic arthritis
- endocarditis (rarely)
- meningitis (very rarely)

GO: complications – revision

prostatitis

periurethral abscesses

cervicitis chronica

tuboovarial abscess

adnexitis chronica → sterility

graviditas extrauterina

GO: laboratory diagnostics – revision I

Direct detection only:

- microscopy
- culture
- molecular biology tests

Sampling places:

- urethra
- cervix, urethra, rectum, pharynx (if necessary)

GO: laboratory diagnostics – revision II

Way of sampling: always 2 swabs

the first swab inoculate directly on culture media (warmed, not from the fridge), or put it into a transport medium, transport it at ambient temperature

from the second swab make a film on the slide

Microscopy (Gram): important in

- acute gonorrhoea in males
- symptomatic gonorrhoea in females

GO: laboratory diagnostics – revision III

Media for gonococci: always combine

a non-selective chocolate agar

with a selective medium with antibiotics

Always fresh (moist) & warm, culture it with added CO_2 (candle jar), read after 24 and 48 hrs

Identification:

biochemistry (oxidase +, glucose +, maltose –)

serology (slide agglutination)

molecular biologic confirmation tests

GO: therapy – revision

Nowadays, many strains of *N. gonorrhoeae* are resistant to penicillin & tetracyclines

Therefore: ceftriaxone or ciprofloxacin
usually in a single dose
because of potential concurrent *Chlamydia trachomatis* infection:
in a combination with doxycycline or azithromycine

Syphilis: course – revision

From the very beginning: syphilis = always a systemic disease!

Early syphilis: primary (ulcus durum)
secondary (mostly rash)
early latent

Late syphilis: latent
terciary (gummas, aortitis, paralysis progressiva, tabes dorsalis)

Congenital syphilis: early and late

Syphilis: therapy – revision

„One night with Venus, the rest of life with Mercury“
Ehrlich and Hata: preparation No 606 – salvarsan
von Jauregg: malaria (because of high fever)

Nowadays, the drug of choice is penicillin (in a high dose)

Primary syphilis:
benzathin penicillin (2,4 MIU) 1 dose

Secondary and late syphilis:
benzathin penicillin (2,4 MIU) 3 times after 7 days

Syphilis: laboratory dg – revision I

Direct detection

From exudative lesions only (mostly from ulcus durum)

- darkfield examination
- PCR
- immunofluorescence

Indirect detection (serology)

= mainstay of laboratory diagnostics of syphilis

Two types of serologic tests:

- with nonspecific antigen (cardiolipin)
- with specific antigen (*Treponema pallidum*)

Syphilis: laboratory dg – revision II

Nontreponemal tests (with cardiolipin):

RRR, VDRL, RPR

fast, cheap, positive early, reflect the activity, but sometimes falsely positive

Treponemal tests:

TPHA, ELISA, WB, FTA-ABS, TPIT

sensitive, more expensive, more specific, but positive later, remaining positive for life

Soft chancre (chancroid) – revision

Agent of ulcus molle: *Haemophilus ducreyi*

Occurrence: the tropics

Course: genital ulcerations (easier transmission of HIV) & purulent lymphadenitis

Dg: only culture on enriched media (chocolate agar with supplements), 3 days at 33 C in 10% CO_2

Lymphogranuloma venereum – revision

Agent of lymphogranuloma venereum (LGV): ***Chlamydia trachomatis*** **serotypes L_1, L_2, L_{2a}, L_3**

Occurrence: the tropics and subtropics

Course: purulent lymphadenitis (tropical bubo) & lymphangoitis with fistulae & scars devastating the pelvic region in females

Dg: mostly serology – CFT with the common antigen of chlamydiae

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The most frequent agents of STD

1. **Papillomaviruses**
2. **Chlamydiae**
3. **Yeasts**

Other common agents of STD:

Trichomonas vaginalis

HSV 2

Mycoplasma & Ureaplasma

Gardnerella vaginalis

Klebsiella granulomatis

HBV

HCV?

HIV

Sarcoptes scabiei

Phthirus pubis

Papillomaviruses

The most frequent agent of genital infections

Papillomaviruses genotypes 6, 11 and many other:

both ♂ & ♀: anogenital warts (condylomata accuminata)

Genotypes 16, 18 and some other ♀: infection of cervix → Ca

A vaccine exists against carcinogenic types

Cultivation impossible – diagnostics is performed via molecular methods

Chlamydiae

The second most frequent agent of genital infections

Chlamydia trachomatis **serotypes D to K**

♂: nongonococcal & postgonococcal urethritis

♀: cervicitis → blenorrhoea neonatorum

Therapy: macrolides and tetracyclines

Lab. dg: direct: detection of antigen

detection of DNA

culture (special cell culture)

indirect (serology): not very useful

Yeasts

The third most frequent agent of genital infections

Candida albicans (rarely other candidae)

♂: balanoposthitis

♀: vaginal mycosis (candidosis, vulvovaginitis)

Therapy: topical imidazoles (clotrimazole)

systemic triazoles (fluconazole)

Lab. dg: microscopy

cultivation (Sabouraud agar)

Trichomonads

Trichomonas vaginalis (a flagellate)

♂: no symptoms (rarely urethritis, males are usually asymptomatic carriers)

♀: vaginitis, cervicitis, urethritis

Therapy: metronidazole (both partners must be treated)

Lab. dg: direct only – microscopy (wet mount, Giemsa stained film) & culture on special media

Mycoplasmas

Mycoplasma hominis

Ureaplasma urealyticum

♂ & ♀: **urethritis**

♀: **postpartum fever, PID?**

Therapy: macrolides and tetracyclines

Lab. dg: direct only – culture on special media

Gardnerellae

Gardnerella vaginalis

♂: 0

♀: bacterial vaginosis (no leukocytes)

Therapy: metronidazole

Lab. dg: direct only –

fish odour test

microscopy (clue cells = epitheliae with adhering cocobacilli – „pepper & salt“)

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Agent of donovanosis

Klebsiella granulomatis **(formerly *Donovania granulomatis*, afterwards *Calymmatobacterium granulomatis*)**

♂ & ♀: granuloma inguinale, donovanosis (genital ulcers in tropics)

Therapy: tetracyclines, macrolides

Lab. dg: microscopy only (Donovan bodies)

Viral agents of STD – HSV 2

Herpes simplex virus type 2

♂ & ♀: herpes genitalis, primary
recurrent

Therapy: acyclovir

Lab. dg: isolation on a cell culture
detection of DNA by PCR
serology (useful in primary infection only)

Viral agents of STD – HBV

Hepatitis B virus

♂ & ♀: viral hepatitis B, acute and chronic

A recombinant vaccine is available (HBsAg)

Therapy: acute VHB: no medication, rest & diet

chronic VHB: interferon

Lab. dg: detection of laboratory markers in blood serum

- HBsAg (in acute & chronic infection, in chronic carriers)
- HBeAg (usually in an acute infection only)
- anti-HBs (after full recovery, after vaccination)
- anti-HBe (after full recovery & in chronic carriers)
- anti-HBc (IgG: dtto, IgM: in acute infection)
- HBV DNA (in acute & chronic infection)

Viral agents of STD – HCV

Hepatitis C virus (sexual transmission not excluded)

♂ & ♀: viral hepatitis C, acute and chronic

Therapy: pegylated interferon + ribavirin

Lab. dg: detection of viral RNA

detection of antibodies (anti-HCV)

Viral agents of STD – HIV

Human immunodeficiency virus (HIV-1 and HIV-2)

♂ & ♀: AIDS (acquired immunodeficiency syndrome)

Therapy: combination of antiretrovirotics (HAART = highly active antiretroviral treatment)

Lab. dg: detection of antibodies (& confirmation of positive findings)

special tests: detection of antigens

determination of viral load

Parasitic agents of STD

Sarcoptes scabiei **(itch mite)**

♂ & ♀: **scabies (mange)**

Therapy: antiscabiotics (permethrine, lindane)

Lab. dg: microscopy from skin

Phthirus pubis **(pubic louse, crab louse)**

♂ & ♀: **pediculosis pubis (phthiriasis)**

Therapy: lindane

Lab. dg: demonstration of lice or eggs

Opportunistic agents of STD

salmonellae

shigellae

campylobacters etc.

HAV

intestinal parasites

→ opportunistic STD after oral-anal contacts

(serious course usually because of a very high infectious dose)

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Homework 8

Please give the name of the author and of the painting

Answer and questions

The solution of the homework and possible questions please mail (on 6.30 a.m. at the latest) to the address

mvotava@med.muni.cz

Thank you for your attention