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Agents of wound infections

**The 9th lecture for 3rd-year students of dentistry
8th December, 2010**

The most frequent agents of STD

– revision

The three most common agents of STD:

1. Papillomaviruses
2. Chlamydiae
3. Yeasts

Other common agents of STD:

Bacteriae: *Mycoplasma & Ureaplasma*
 Gardnerella vaginalis
 Klebsiella granulomatis

Viruses: **HSV 2**
 HBV
 HCV?
 HIV

Parasites: *Trichomonas vaginalis*
 Sarcoptes scabiei
 Phthirus pubis

Papillomaviruses – revision

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 – revision

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 – revision

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)

Mycoplasmas – revision

Mycoplasma hominis

Ureaplasma urealyticum

♂ & ♀: urethritis

♀: postpartum fever, PID?

Therapy: macrolides and tetracyclines

Lab. dg: direct only – culture on special media

Gardnerellae – revision

Gardnerella vaginalis

♂: 0

♀: **bacterial vaginosis** (no leukocytes)

Therapy: metronidazole

Lab. dg: direct only –

fish odour test

microscopy (**clue cells** =

epitheliae with adhering

cocobacilli – „pepper &

G
salt“)

Agent of donovanosis – revision

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

– revision

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

– revision

Hepatitis B virus

♂ & ♀: **viral hepatitis B**, acute and chronic

A recombinant vaccine is available (containing 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 – revision

Hepatitis C virus (sexual transmission
very probable)

♂ & ♀: 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 – revision

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

♂ & ♀: **AIDS** (acquired immunodeficiency syndrome)

Therapy: combination of antiretrovirals (even HAART = highly active antiretroviral treatment doesn't cure the patient completely but prolongs life for many years)

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

special tests: detection of antigens

determination of viral load

Parasitic agents of STD – revision I

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

Parasitic agents of STD – revision II

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 – revision

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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Common superficial injuries

- *Staphylococcus aureus*
 - *Streptococcus pyogenes*
 - beta-hemolytic streptococci of other groups (above all G, F, C)
- ! Attention in case of a foreign body in the wound (splinter, thorn) and in case of deeper stab wounds (fork soiled by horse manure): *Clostridium tetani***

Severe contused wounds

- **Agents of clostridial myonecrosis (mostly *Clostridium perfringens*, *C. septicum*, *C. novyi*, *C. histolyticum*)**

**clostridial myonecrosis = anaerobic
traumatosis = gas gangrene or malignant
edema**

- ***Clostridium tetani***
- ***Staph. aureus*, *Strept. pyogenes* & other
pyogenic bacteria**

Wounds sustained in water

- In fresh water:

Pseudomonas aeruginosa

Aeromonas hydrophila

other pseudomonads and aeromonads

- In salt water:

Vibrio parahaemolyticus, *V. vulnificus*

Mycobacterium marinum (also in fresh-water swimming pools, tanks and aquaria)

Injuries sustained in the tropics

Mainly on feet

- **soil nocardiae** (*Dermatophilus congolensis*, *Rhodococcus equi*)
- **atypical mycobacteria** (*Mycobacterium ulcerans*, *Mycobacterium haemophilum*)
- **micromycetes** (*Sporothrix schenckii*, *Paracoccidioides brasiliensis*)

Surgical wounds

Staphylococcus aureus

**coagulase-negative staphylococci (mainly
Staphylococcus epidermidis)**

***Enterobacteriaceae* (*Escherichia coli*,
Proteus mirabilis)**

Streptococcus pyogenes

**anaerobes (*Peptostreptococcus micros*,
Peptostreptococcus anaerobius,
Bacteroides fragilis)**

Burns

Almost everything, but predominantly:

Pseudomonas aeruginosa

Staphylococcus aureus

Streptococcus pyogenes

other streptococci

enterococci

candidae and aspergilli

Man- inflicted bites

members of oral microflora

- „oral streptococci“ (*Streptococcus sanguinis*, *S. oralis*, *S. anginosus*)
- anaerobes (*Fusobacterium nucleatum* ssp. *nucleatum*, *Porphyromonas gingivalis*)

Staphylococcus aureus

Animal bites

Most often:

Pasteurella multocida (cats, dogs)

Less often:

Staphylococcus aureus (any animal)

Capnocytophaga canimorsus (dogs)

Streptobacillus moniliformis (rats)

Spirillum minus (mice, rats, cats, dogs)

Francisella tularensis (cats)

& many others

Other injuries by animals

Francisella tularensis (rodents, hares – tularemia)

Bartonella henselae (cat scratch disease)

Erysipelothrix rhusiopathiae (pigs, carps – erysipeloid)

Bacillus anthracis (herbivores – skin anthrax, pustula maligna)

Burkholderia mallei (horses, donkeys – glanders, malleus)

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Homework 9

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