

Chapter 25 Genitourinary Infections

Summary Outline

- 25.1 Anatomy and Physiology
- The genitourinary system is an important portal of entry for pathogens.
 - The washing action of urination is an important defense mechanism against infections.
 - Urinary tract infections are more common in women because of the short urethra and the closeness of genital and intestinal tract openings.
 - The fallopian or uterine tube provides a passageway for microorganisms to enter the abdominal cavity.
- 25.2 Normal flora
- Urethra:** The distal urethra is inhabited by **various microorganisms** including potential pathogens.
 - Vagina:** The normal vaginal flora includes **lactobacilli**, which make the vagina more resistant to colonization by pathogens.
- 25.3 Urinary system infections
- Risk factor:** Any condition that impairs normal bladder emptying.
 - Usually the urinary system becomes infected by **organisms ascending from the urethra**, but it can also be **infected from the bloodstream**.
 - Bacterial cystitis** is most often caused by *Escherichia coli* or other enterobacteria from the person's own normal intestinal flora. **Nosocomial urinary infections** are also caused by *Pseudomonas aeruginosa*, *Serratia marcescens*, and *Enterococcus faecalis*.
 - Pyelonephritis** may complicate untreated bladder infection when pathogens ascend through the ureters and involve the kidneys.
 - Leptospirosis** is caused by *Leptospira interrogans*, which enters from the bloodstream. Symptoms include **fever, bloodshot eyes and pain**.
- 25.4 Genital system diseases not transmitted by sexual intercourse
- Bacterial vaginosis** is the **most common cause of vaginal symptoms** including a **gray-white discharge** from the vagina and a **pungent fishy odor**; there is **no inflammation**. The **causative agent is unknown**.
 - Vulvovaginal candidiasis** is caused by a yeast, *Candida albicans*, and is the second most common cause of vaginal disorders. Symptoms include **itching, burning, a vulvar rash** and a **thick white discharge**. **Antibacterial treatment, uncontrolled diabetes** and **oral contraceptives** are predisposing factors.
 - Staphylococcal toxic shock** became widely known with a 1980 epidemic in menstruating women who used a certain kind of **vaginal tampon**. Symptoms include **sudden fever, headache, muscle aches, bloodshot eyes, vomiting, diarrhea, a sunburn-like rash** which later peels, and **confusion**. The **blood pressure drops** and, **without treatment, kidney failure and death occur**.
- 25.5 Sexually transmitted diseases
- Incidence in the United States: 15 million new sexually transmitted infections occur each year, including 3 million in teenagers.**
 - Control:** Simple measures for controlling STDs include **abstinence from sexual intercourse, a monogamous relationship** with an uninfected person, and consistent **use of latex or polyurethane condoms**.
- 25.6 Bacterial STDs
- Gonorrhea**, caused by *Neisseria gonorrhoeae*, has been generally **declining in incidence**, but it is still **one of the most commonly reported bacterial diseases**. In men the symptoms

- include **painful urination** and **thick pus draining** from the urethra. In **women** the symptoms tend to be **milder** and are **often overlooked**. Expression of **different surface antigens** allows attachment to different types of cells, **but frustrates development of a vaccine**. **Inflammatory reaction** to the infection causes scarring that can partially **obstruct the urethra** or cause **sterility** in men and women.
- B. **Chlamydial STD infections**, caused by *Chlamydia trachomatis*, are **reported more often than any other bacterial disease**. Symptoms and complications of chlamydial infections are **similar to those of gonorrhea, but milder; asymptomatic infections are common and readily transmitted**.
- C. **Syphilis** is caused by *Treponema pallidum*. **Primary syphilis** is noted by a painless firm ulceration called a **hard chancre**; the **organisms multiply and spread throughout the body**. In **secondary syphilis**, **skin and mucous membranes show lesions**, which contain the organisms; a **latent period** of months or years separates it from tertiary syphilis. **Tertiary syphilis** is not contagious and is manifest mainly by **damage to the eyes, cardiovascular and central nervous systems**. An inflammatory **necrotizing mass** called a **gumma** can involve any part of the body. Syphilis in **pregnant women** can spread across the placenta to involve the fetus (**congenital syphilis**).
- D. **Chancroid** is a **widespread bacterial STD**, but it is **not commonly reported** because of difficulties in diagnosis. Caused by *Haemophilus ducreyi*, chancroid is characterized by a **single or multiple soft, tender genital ulcers and enlarged, painful groin lymph nodes**.
- 25.7 **Viral STDs** are at least as common as bacterial STDs but they are **not yet curable**.
- A. **Genital herpes simplex** is a **very common disease**, important because of the **discomfort and emotional trauma** it causes, its **potential for causing death in newborn infants**, its **association with cancer of the cervix** and the **increased risk it poses for HIV infection and AIDS**. Symptoms may include a **group of vesicles with itching, burning or painful sensations**, which break leaving a **superficial ulcer**. **Local lymph nodes enlarge**. Many **have few or no symptoms**; some have painful recurrences. The virus establishes a **latent infection in sensory nerves**; it can be transmitted in the absence of symptoms, but the risk is greatest when lesions are present.
- B. **Papillomavirus STDs** are **small DNA viruses that have not been cultivated in the laboratory**. They are probably **more prevalent than any other kind of STD**. They are **manifest as warts on or near the genitalia and as precancerous lesions**. The **latter are asymptomatic** and can only be detected by medical examination. They are associated with **cervical cancer**.
- C. **AIDS is the end stage of disease caused by human immuno-deficiency virus (HIV)**. HIV disease is usually first manifest as a **flu-like illness** that develops about six weeks after contracting the virus. An **asymptomatic interval follows** that typically lasts almost ten years during which the **immune system is slowly and progressively destroyed**. **Unusual cancers and infectious diseases** then herald the onset of AIDS. **No vaccine or medical cure is yet available**, but **spread of infection could be significantly slowed by consistent use of condoms and employment of sterile needles by injected-drug abusers**. A marked **reduction in mother to newborn transmission can be achieved with medication**.
- 25.8 **Protozoan STDs**: Intestinal protozoan diseases such as **giardiasis and cryptosporidiosis** are transmitted by the **fecal-oral route** in those individuals who engage in **oral genital and anal contact** as part of sexual activity.
- A. **Trichomoniasis** (“trich”) is caused by *Trichomonas vaginalis*. This **often-asymptomatic disease**, may produce symptoms that include itching, burning, swelling and redness of the vagina, with frothy, sometimes smelly, yellow-green discharge and burning on urination. Men have discharge from the penis, burning on urination, sometimes accompanied by painful testes and tender prostate gland.