

Chapter 28 Blood and Lymphatic Infections

Summary Outline

- 28.1 Anatomy and Physiology
- The cardiovascular system is a transportation system composed of the heart, blood vessels, blood, lymph nodes, lymph vessels, lymph and capillaries
 - Arteriosclerotic lesions are often colonized by *Chlamydia pneumoniae*, whose significance in the disease process is not yet understood.
- 28.2 **Bacterial diseases of the blood vascular system**
- Bacteria circulating in the bloodstream can colonize the inside of the heart, and cause collapse of the circulatory system and death. Infections of the heart valves and lining of the heart are called endocarditis. Illness resulting from circulating pathogens is called septicemia.
 - Acute bacterial endocarditis** is caused when virulent bacteria enter the bloodstream from a **focus of infection; normal heart valves are commonly infected and destroyed.**
 - Subacute bacterial endocarditis (SBE)** is commonly caused by organisms of little virulence, including **oral streptococci** and *Staphylococcus epidermidis*. Infection usually begins on **structural abnormalities of the heart.**
 - Gram-negative septicemia** is commonly a **nosocomial illness.** Often affects individuals have **serious underlying illnesses** such as cancer and diabetes. A **common complication is shock** precipitated by **release of endotoxin** from the bacteria.
- 28.3 **Bacterial diseases involving the lymph nodes and spleen**
- Tularemia, brucellosis and plague** involve the **mononuclear-phagocyte system** and are characterized by **enlargement of the lymph nodes and spleen.**
 - The causative organisms **grow within phagocytes**, protected from antibody.
 - Tularemia (rabbit fever)** is usually transmitted from wild animals to humans by exposure to the animals' blood or by insects and ticks. The cause is the Gram-negative aerobe *Francisella tularensis*.
 - Brucellosis (undulant fever)**, caused by *Brucella melitensis*, usually **acquired from cattle or other domestic animals.** The organisms can infect via mucous membranes and minor skin injuries.
 - Plague (black death)**, once pandemic, now persists endemically in **rodent populations**, including those in many Western states of the U.S. It is caused by *Yersinia pestis*, an enterobacterium with many **virulence factors, chromosomally or plasmid coded, which interfere with phagocytosis and immunity.** **Bubonic plague is transmitted to humans by fleas** and **pneumonic plague** is transmitted person-to-person. Untreated, **bubonic plague** has a **mortality rate of 50-80%** and **pneumonic plague** has a mortality rate of **almost 100%**
- 28.4 **Viral disease of the lymphoid or blood vascular systems**
- Infectious mononucleosis** (mono, kissing disease) is caused by **Epstein-Barr virus (EBV)**, which establishes a **lifelong latent infection** of B lymphocytes. Incidence is high in 15- to 24-year olds.
 - Yellow fever** is a **zoonosis** of mosquitoes and monkeys that exists mainly in **tropical jungles.** It can become epidemic in humans where a suitable *Aedes* **mosquito vector** is present. The disease involves the **heart and blood vessels** and is characterized by **fever, jaundice** and **hemorrhaging.** There is a highly effective **live attenuated vaccine** available.
- 28.5 **Protozoan diseases**
- African sleeping sickness** is present over much of tropical Africa.
 - Malaria**, caused by **four species of Plasmodium** and transmitted from person to person by the bite of *Anopheles* mosquitoes, is the **most widespread of the all serious infectious**

diseases, mainly found in impoverished warm regions of the world. The **life cycle is complex**; different forms of the organism invade different body cells and have **different susceptibility to antimalarial medication**.