The Nature of Host Defenses.I:B

MIcro451 Immunology

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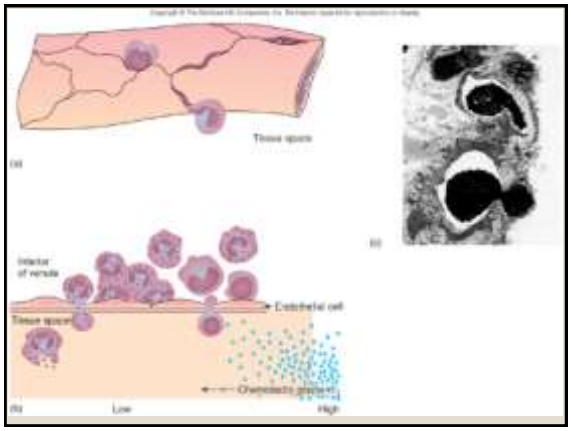
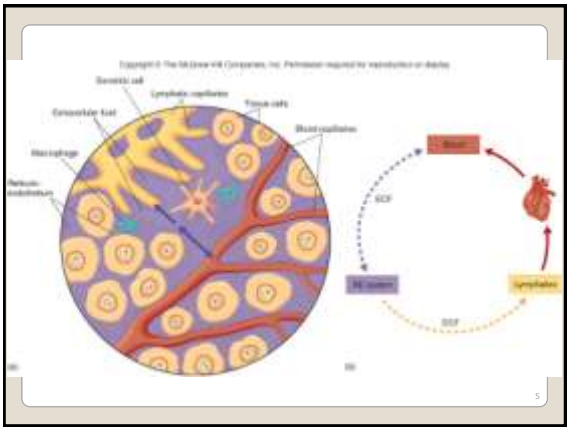


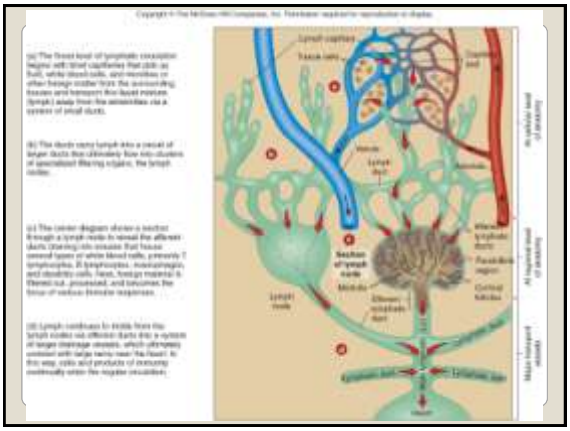
1. Provides an auxiliary route for return of extracellular fluid to the circulatory system
2. Acts as a drain-off system for the inflammatory response
3. Renders surveillance, recognition, and protection against foreign material

Lymphatic system

- Key cells in the third line of defense and the specific immune response
- When stimulated by antigens, transform into activated cells that neutralize and destroy that foreign substance
- **B cells**
  - **Humoral immunity**: protective molecules carried in the fluids of the body
  - Produce specialized **plasma cells** which produce **antibodies**
- **T cells**
  - **Cell-mediated immunity**: T cells modulate immune functions and kill foreign cells

Lymphocytes





- Lymphatic system: compartmentalized network of vessels, cells, and specialized accessory organs
- Transports lymph through a system of vessels and lymph nodes
- Major functions
  - Provide an auxiliary route for the return of extracellular fluid to the circulatory system proper
  - Act as a drain-off system for the inflammatory response
  - Render surveillance, recognition, and protection against foreign materials

Components and Functions of the Lymphatic System

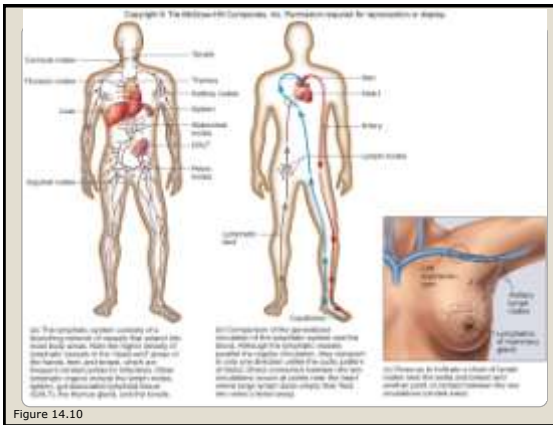


Figure 14.10

- Lymph
- Plasmalike liquid formed when certain blood components move out of blood vessels into the extracellular spaces and diffuse or migrate into the lymphatic capillaries
- Composition parallels that of plasma, but without red blood cells

Lymphatic Fluid

- Along the lines of blood vessels
- Similar to thin-walled veins
- High numbers in hands, feet, and around the areola of the breast
- Flow of lymph is in one direction only- from extremities toward the heart
- Lymph is moved through the contraction of skeletal muscles through which the lymphatic ducts wend their way

Lymphatic Vessels

- Lymph nodes
- Thymus
- Spleen
- Gut-associated lymphoid tissue (GALT)
- Tonsils
- Loose connective tissue framework that houses aggregations of lymphocytes

Lymphoid Organs and Tissues

- Small, encapsulated, bean-shaped organs
- Usually found in clusters along lymphatic channels and large blood vessels of the thoracic and abdominal cavities
- Major aggregations: axillary nodes, inguinal nodes, cervical nodes

Lymph Nodes

- Similar to a lymph node except it filters blood instead of lymph
- Filters pathogens from the blood

Spleen

- **Thymus** originates in the embryo
- High rates of activity and growth until puberty
- Shrinks gradually through adulthood
- Thymic hormones help thymocytes develop specificity to be released as mature T cells

The Thymus: Site of T-Cell Maturation

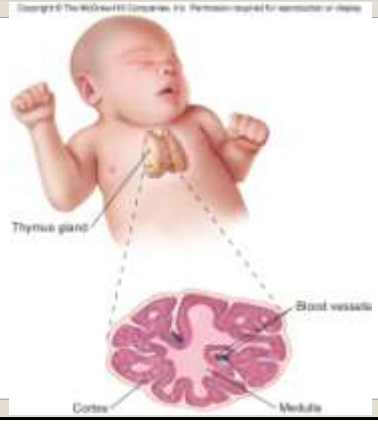


Figure 14.11

Miscellaneous Lymphoid Tissue

- Bundles of lymphocytes lie at many sites on or just beneath the mucosa of the gastrointestinal and respiratory tracts
- Tonsils
- Breasts of pregnant and lactating women
- **GALT** in the intestinal tract
  - Appendix
  - Lacteals
  - **Peyer's patches**
- Mucosal-associated lymphoid tissue (MALT)
- Skin-associated lymphoid tissue (SALT)
- Bronchial-associated lymphoid tissue (BALT)