Chapter Fourteen
MULTIPLE CHOICE QUIZ

In the box write the letter of the choice that is the definition of the term or best answers the question. There is only one correct answer for each question.

1. **Formation of lymph:**
   A. Lymphocytopenia  
   B. Lymphadenitis  
   C. Lymphedema  
   D. Lymphopoiesis  
   E. Lymphoid

2. **Interstitial fluid contains or is:**
   A. Antibodies produced by white blood cells  
   B. Red and white blood cells  
   C. Found in the spaces between cells and becomes lymph when it enters lymph capillaries  
   D. Connective tissue  
   E. Blood clotting factors

3. **All of the following are part of the immune system EXCEPT:**
   A. Lymphocytes  
   B. Platelets  
   C. Monocytes  
   D. Phagocytes  
   E. Antibodies

4. **All of the following describe areas of lymph node concentration EXCEPT:**
   A. Inguinal  
   B. Axillary  
   C. Bone marrow  
   D. Mediastinal  
   E. Cervical

5. **Atopy is:**
   A. An early stage of AIDS  
   B. A hypersensitivity or allergic state  
   C. A type of lymphoma  
   D. A disease found in tropical areas  
   E. Acute infectious disease caused by Epstein-Barr virus

6. **Helper or suppressor cells are types of:**
   A. B cells  
   B. T cells  
   C. Platelets  
   D. Antigens  
   E. Antibiotics

7. **Examples of immunoglobulins:**
   A. IgA, IgG, IgE  
   B. Monocytes  
   C. Lymphocytes  
   D. Hepatocytes  
   E. Clotting factors

8. **Oropharyngeal lymph tissue:**
   A. Spleen  
   B. Thymus  
   C. Bone marrow  
   D. Tonsils  
   E. Adenoids

9. **Mediastinal T-cell producer:**
   A. Spleen  
   B. Thymus  
   C. Bone marrow  
   D. Tonsils  
   E. Adenoids

10. **Nasopharyngeal lymph tissue:**
   A. Spleen  
   B. Thymus  
   C. Bone marrow  
   D. Tonsils  
   E. Adenoids

11. **Abdominal organ that filters erythrocytes and activates lymphocytes:**
    A. Spleen  
    B. Thymus  
    C. Bone marrow  
    D. Tonsils  
    E. Adenoids

12. **Produces lymphocytes and monocytes and all other blood cells:**
    A. Spleen  
    B. Thymus  
    C. Bone marrow  
    D. Tonsils  
    E. Adenoids
13. Cytotoxic cells are: ....................................................
   A. B cell lymphocytes
   B. T-cell lymphocytes
   C. Platelets
   D. Thrombocytes
   E. Eosinophils

14. Interferons and interleukins are: ........
   A. Gamma globulins
   B. Interstitial fluid
   C. Antiviral proteins produced by T-cell lymphocytes
   D. Produced by B-cell lymphocytes
   E. Helper cells

15. Slight increase in numbers of lymphocytes: ......................................
   A. Lymphocytopenia
   B. Lymphopoiesis
   C. Lymphoid
   D. Lymphocytosis
   E. Lymphedema

16. Pertaining to poison: .....................
   A. Necrotic
   B. Hypoxic
   C. Cyanotic
   D. Toxic
   E. Stenotic

17. Computerized x-ray imaging in the transverse plane: ................................
   A. CT scan
   B. Lymphangiogram
   C. Ultrasonography
   D. MRI
   E. Lymphadenectomy

18. HIV is: ...............................................
   A. A malignancy associated with AIDS
   B. A drug used to treat AIDS
   C. The virus that causes AIDS
   D. The test used to detect AIDS
   E. A type of lymphoma

19. Malignant tumor of lymph nodes: ......
   A. Sarcoidosis
   B. Lymphedema
   C. Hodgkin lymphoma
   D. Hypersplenism
   E. Lymphocytopenia

20. Viral infection causing blisters on skin of lips, nose, or genitals: ........
   A. Kaposi sarcoma
   B. Herpes simplex
   C. Cryptococcus
   D. Toxoplasmosis
   E. Pneumocystis jiroveci pneumonia

21. Cancer arising from the lining cells of capillaries, producing bluish red skin nodules: ....................................................
   A. Kaposi sarcoma
   B. Herpes simplex
   C. Cryptococcus
   D. Toxoplasmosis
   E. Pneumocystis jiroveci pneumonia

22. Major lung infection with fever, cough, chest pain, and sputum. Treatment is with Bactrim ......................................
   A. Kaposi sarcoma
   B. Herpes simplex
   C. Cryptococcosis
   D. Toxoplasmosis
   E. Pneumocystis jiroveci pneumonia

23. Protozoal (parasitic) infection associated with AIDS. Produces pneumonitis, hepatitis, and encephalitis: ..................
   A. Kaposi sarcoma
   B. Herpes simplex
   C. Cryptococcosis
   D. Toxoplasmosis
   E. Pneumocystis jiroveci pneumonia

24. Fungal infection associated with AIDS. Involves brain and meninges, lungs, and skin: ............................................
   A. Kaposi sarcoma
   B. Herpes simplex
   C. Cryptococcosis
   D. Toxoplasmosis
   E. Pneumocystis jiroveci pneumonia
VOCABULARY QUIZ

Name: ______________________________

A. Match the following vocabulary terms with their meanings below:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>acquired immunity</td>
<td>B cell</td>
</tr>
<tr>
<td>adenoids</td>
<td>cervical nodes</td>
</tr>
<tr>
<td>antigen</td>
<td>cytokines</td>
</tr>
<tr>
<td>axillary nodes</td>
<td>cytotoxic T cell</td>
</tr>
</tbody>
</table>

1. Lymph nodes in the neck region

2. Substance that the body recognizes as foreign and evokes an immune response

3. Production of antibodies and lymphocytes in response to exposure to an antigen

4. Lymphocyte that aids B cells in recognizing antigens and stimulating antibody production (CD4+ cell)

5. Mass of lymphatic tissue in the nasopharynx

6. Cell (specialized macrophage) that digests foreign cells and helps B and T cells recognize and mark antigens for destruction

7. T lymphocyte that directly kills antigens (CD8+ cell)

8. Lymph nodes in the armpit

9. Proteins that aid and regulate the immune response

10. Lymphocyte that originates in the bone marrow and transforms into a plasma cell to secrete antibodies
B. **Match the following vocabulary terms with their meanings below:**

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>immunity</td>
<td>Body's ability to resist foreign organisms and toxins (immune response)</td>
</tr>
<tr>
<td>immunoglobulins</td>
<td>Proteins (cytokines) secreted by T cells to aid and regulate the immune response</td>
</tr>
<tr>
<td>immunotherapy</td>
<td>Use of immune cells and antibodies or vaccines to treat and prevent disease</td>
</tr>
<tr>
<td>lymphoid organs</td>
<td>Lymph nodes in the intestine region</td>
</tr>
<tr>
<td>lymph capillaries</td>
<td>Thin, watery fluid found within lymphatic vessels</td>
</tr>
<tr>
<td>inguinal nodes</td>
<td>Tiniest lymphatic vessels</td>
</tr>
<tr>
<td>interferons and interleukins</td>
<td>Stationary, solid lymphatic tissue along lymph vessels</td>
</tr>
<tr>
<td>lymph node</td>
<td>Fluid in the spaces between cells</td>
</tr>
<tr>
<td>lymph node</td>
<td>Lymph nodes, spleen, and thymus gland; tissue through which lymph travels</td>
</tr>
<tr>
<td>mesenteric nodes</td>
<td>Use of immune cells and antibodies or vaccines to treat and prevent disease</td>
</tr>
<tr>
<td>paraaortic nodes</td>
<td>Lymph nodes associated with a major artery</td>
</tr>
</tbody>
</table>

1. Thin, watery fluid found within lymphatic vessels ________________
2. Tiniest lymphatic vessels ________________
3. Proteins (cytokines) secreted by T cells to aid and regulate the immune response ________________
4. Antibodies that are secreted by plasma cells in response to the presence of an antigen ________________
5. Body's ability to resist foreign organisms and toxins (immune response) ________________
6. Lymph nodes in the groin ________________
7. Stationary, solid lymphatic tissue along lymph vessels ________________
8. Fluid in the spaces between cells ________________
9. Lymph nodes, spleen, and thymus gland; tissue through which lymph travels ________________
10. Use of immune cells and antibodies or vaccines to treat and prevent disease ________________
11. Lymph nodes associated with a major artery ________________
12. Lymph nodes in the intestinal region ________________
C. Match the following vocabulary terms with their meanings below:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>lymph vessel</td>
<td>natural immunity</td>
</tr>
<tr>
<td>macrophage</td>
<td>suppressor T cell</td>
</tr>
<tr>
<td>mediastinal nodes</td>
<td>plasma cell</td>
</tr>
<tr>
<td>monoclonal antibody</td>
<td>right lymphatic duct</td>
</tr>
<tr>
<td>spleen</td>
<td>tolerance</td>
</tr>
</tbody>
</table>

1. Lymphocyte that produces and secretes antibodies
2. Carrier of lymph throughout the body
3. Lymph nodes in the area between the lungs in the thoracic cavity
4. The ability of T cells (T lymphocytes) to recognize and accept the body's own antigens as "self"
5. Large phagocyte found in lymph nodes and other tissues of the body
6. Antibody produced in a laboratory to attack antigens and destroy cells
7. Organ near the stomach that produces, stores, and eliminates blood cells
8. Protection that an individual is born with to fight infection
9. Lymphocyte that inhibits the activity of B and T cells (Treg)
10. Large lymphatic vessel in the chest that receives lymph from the upper right portion of the body

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### D. Match the following vocabulary terms with their meanings below:

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>cell-mediated immunity</td>
<td>thymus gland</td>
</tr>
<tr>
<td>humoral immunity</td>
<td>vaccination</td>
</tr>
<tr>
<td>thoracic duct</td>
<td>tonsils</td>
</tr>
<tr>
<td>toxin</td>
<td>vaccine</td>
</tr>
</tbody>
</table>

1. Mass of lymphatic tissue in the back of the oropharynx
2. Organ in the mediastinum that conditions T cells to react to foreign cells
3. A poison
4. Weakened or killed microorganisms, toxins, or other proteins (antigens) given to provoke an immune response
5. Large lymphatic vessel in the chest that receives lymph from below the diaphragm and from the left side of the body above the diaphragm
6. Exposure of an individual to a foreign protein (antigen) that provokes an immune response
7. Involves B cells that produce antibodies
8. Involves T cells that respond to antigens and destroy them
Chapter Fourteen
TERMINOLOGY QUIZ
(name: ______________________________)

(textbook pages 558–559)

A. Complete the following terms to match the definitions below; select from the following medical word parts:

- cyt/o  -globulin  -pathy
- cytosis  -itis  -penia
- ectomy  -megaly  -poiesis
- edema  -oid

1. Deficiency of lymphocytes: lympho __________________________
2. Antibody (protein) secreted by plasma cells: immuno __________________________
3. Formation of lymph: lympho __________________________
4. Increase in numbers of lymphocytes: lympho __________________________
5. Swelling within tissue spaces (collection of interstitial fluid): lymph __________________________
6. Organs that are part of the lymph system: lymph __________________________ organs
7. Disease of lymph nodes: lymphaden __________________________
8. Enlargement of the spleen: spleno __________________________
9. Inflammation of lymph nodes: lymphaden __________________________
10. Excision of the spleen: spleno __________________________

B. Select from the following terms to match the definitions below:
anaphylaxis hypersplenism thymectomy
asplenia immunosuppression toxic
autoimmune disease interstitial fluid

1. Removal of the thymus gland __________________________
2. Exaggerated or unusual hypersensitivity to previously encountered proteins or antigens __________________________
3. Pertaining to a poison __________________________
4. Syndrome marked by enlarged spleen, anemia, blood cell destruction __________________________
5. Liquid that bathes and surrounds cells __________________________
6. Abnormal production of antibodies against normal body tissues __________________________
7. Normal reaction of the immune system to foreign agents is impaired __________________________
8. Condition of absence of the spleen __________________________
Chapter Fourteen

PATHOLOGY QUIZ

(textbook pages 559–563)

Name: ______________________________

A. Match the following pathologic conditions and associated terms with their meanings below:

- acquired immunodeficiency syndrome
- CD4+ cells
- human immunodeficiency virus
- Kaposi sarcoma
- opportunistic infections
- protease inhibitor
- reverse transcriptase inhibitor
- wasting syndrome

1. Infections diseases associated with AIDS __________________________
2. Drug that treats AIDS by blocking the production of a proteolytic enzyme that creates new viral pieces for HIV __________________________
3. Malignant condition associated with AIDS; colored skin nodules appear __________________________
4. Infectious agent that causes AIDS __________________________
5. Weight loss, decrease in muscular strength, appetite and mental activity __________________________
6. Drug that treats AIDS by blocking an enzyme needed to make copies of HIV __________________________
7. Group of symptoms associated with suppression of the immune system; infections, new growths, and neurologic problems __________________________
8. Helper T cells that are destroyed by the AIDS virus __________________________

B. Match the following pathologic terms with their definitions below:

- allergen
- allergy
- atopic dermatitis
- Hodgkin lymphoma
- multiple myeloma
- non-Hodgkin lymphoma
- severe combined immunodeficiency disease
- thymoma

1. Malignant tumor of a lymphoid organ in the mediastinum __________________________
2. Malignant tumor of bone marrow cells (plasma cells) __________________________
3. Substance capable of causing a specific hypersensitivity reaction in the body __________________________
4. Group of malignant tumors involving lymphoid tissue; follicular and large cell are types __________________________
5. Malignant tumor of lymph tissue in the spleen and lymph nodes; Reed-Sternberg cell is often found on microscopic analysis __________________________
6. Hypersensitivity or allergic state involving an inherited predisposition; inflammation of the skin __________________________
7. Infants are born with deficiency of B and T cells __________________________
8. Abnormal hypersensitivity acquired by exposure to an antigen __________________________

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A. Match the following with their definitions below:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD4+ cell count</td>
<td>Measures the number of helper T cells in the bloodstream of patients with AIDS</td>
</tr>
<tr>
<td>computed tomography</td>
<td>X-ray imaging produces cross-sectional and other views of anatomic structures</td>
</tr>
<tr>
<td>ELISA</td>
<td>Test that separates immunoglobulins</td>
</tr>
<tr>
<td>immunoelectrophoresis</td>
<td>Screening test to detect anti-HIV antibodies in the bloodstream</td>
</tr>
<tr>
<td>viral load test</td>
<td>Antibody produced in a laboratory to attack antigens and destroy cells</td>
</tr>
<tr>
<td>MoAb</td>
<td>Suppressor T cell that inhibits the activity of B and T cells</td>
</tr>
<tr>
<td>Treg</td>
<td></td>
</tr>
</tbody>
</table>
B. On the line provided, give meanings for the following abbreviations, then write each abbreviation next to its explanation below:

1. AIDS
2. NHL
3. HAART
4. HD
5. HIV
6. IgA
7. KS
8. SCID

a. ________ Use of combinations of drugs that are effective against AIDS
b. ________ Malignant tumor of lymph tissue in spleen and lymph nodes; Reed-Sternberg cell is often found on microscopic analysis
c. ________ Malignant condition associated with AIDS; dark-colored skin nodules appear
d. ________ Group of malignant tumors involving lymphoid tissue; follicular and large cell are types
e. ________ Infants are born with a deficiency of B and T cells
f. ________ Infectious agent that causes AIDS
g. ________ Group of symptoms associated with suppression of the immune system
h. ________ Antibody in the blood
The questions on this quiz have all been taken from the exercises at the end of this chapter.

A. Give the name of the structure or fluid from its meaning below:

1. Stationary lymph tissue along the path of lymph vessels ____________________________

2. Large thoracic lymph vessel draining lymph from lower and left side of the body ________________________________________________________________

3. Organ near the stomach that produces, stores, and eliminates blood cells ____________________

4. Mass of lymph tissue in the nasopharynx _______________________________________________

5. Organ in the mediastinum that produces T-cell lymphocytes _____________________________

6. Tiniest of lymph vessels _____________________________________________________________

7. Large lymph vessel in the chest that drains lymph from right upper part of the body ______________________________________________________________

8. Fluid that lies between cells and becomes lymph as it enters lymph capillaries ____________________________________________________________

B. Give the locations of the following lymph nodes:

9. inguinal nodes _______________________ 11. cervical nodes __________________________

10. axillary nodes ________________________ 12. mediastinal nodes _______________________ 

C. Match the term in Column I with its description in Column II

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. immunoglobulins</td>
<td>A. Lymphocytes that inhibit the activity of B and T cells; Treg</td>
</tr>
<tr>
<td>14. toxins</td>
<td>B. Antibodies—IgG, IgE, IgM, IgD</td>
</tr>
<tr>
<td>15. helper T cells</td>
<td>C. Lymphocytes that aid B cells and stimulate T cells.</td>
</tr>
<tr>
<td>16. cytotoxic cells</td>
<td>D. Poisons (antigens)</td>
</tr>
<tr>
<td>17. interferons</td>
<td>E. Lymphocyte that directly kills antigens.</td>
</tr>
<tr>
<td>18. plasma cells</td>
<td>F. Proteins secreted by T cells</td>
</tr>
<tr>
<td>19. suppressor T cells</td>
<td>G. Lymphocytes that secrete antibodies</td>
</tr>
</tbody>
</table>
D. Build medical terms:

20. removal of the spleen
21. inflammation of lymph glands (nodes)
22. tumor of the thymus gland
23. disease of lymph glands (nodes)
24. formation of lymph
25. deficiency of lymph cells
26. pertaining to poison
27. enlargement of the spleen

E. Match the following terms with their meanings below:

AIDS  Hodgkin lymphoma  lymphoid organs
allergen  hypersplenism  thymectomy
anaphylaxis  lymphedema

28. Syndrome marked by enlargement of the spleen and associated with anemia, leukopenia, and thrombocytopenia
29. An extraordinary hypersensitivity to a foreign protein; marked by hypotension, shock, respiratory distress
30. An antigen capable of causing allergy (hypersensitivity)
31. Disorder in which the immune system is suppressed by exposure to HIV
32. Removal of a mediastinal organ
33. Malignant tumor of lymph nodes and spleen marked by Reed-Sternberg cell identified in lymph nodes
34. Tissues that produce lymphocytes—spleen, thymus, tonsils, and adenoids
35. Swelling of tissues due to interstitial fluid accumulation

F. Give meanings for the following terms or abbreviations:

36. HIV
37. Histo
38. KS
39. PCP
40. CT scan
41. Toxo
G. Match the following terms with their meanings below:

ELISA  opportunistic infections
immunoelectrophoresis  zidovudine
helper T cells

42. White blood cells that are destroyed by HIV ________________________________
43. Test to separate immunoglobulins _________________________________________
44. Drug used to treat AIDS by blocking the growth of AIDS virus _________________
45. Test used to detect anti-HIV antibodies ______________________________________
46. Group of infectious diseases associated with AIDS _____________________________
Chapter 14  ■  DICTATION AND COMPREHENSION QUIZ  363

Chapter Fourteen
DICTATION AND
COMPREHENSION QUIZ

Name: ______________________________

A. Dictation of Terms

1. ____________________________________ 11.  ______________________________________
2. ____________________________________ 12.  ______________________________________
3. ____________________________________ 13.  ______________________________________
4. ____________________________________ 14.  ______________________________________
5. ____________________________________ 15.  ______________________________________
6. ____________________________________ 16.  ______________________________________
7. ____________________________________ 17.  ______________________________________
8. ____________________________________ 18.  ______________________________________
9. ____________________________________ 19.  ______________________________________
10. ____________________________________ 20.  ______________________________________

B. Comprehension of Terms: Match the number of the above term with its meaning below.

_____ Malignant tumor associated with AIDS; appears as bluish red skin nodules
_____ Hypersensitive or allergic state involving hereditary predisposition
_____ Disease condition of lymph nodes
_____ Enlargement of the spleen
_____ Collection of lymph tissue in the groin
_____ Substance capable of causing a specific hypersensitivity reaction in the body
_____ A drug that is used to treat AIDS by blocking the production of an enzyme
_____ An exaggerated or unusual hypersensitivity to a foreign protein
_____ Lymphocyte that aids B cells and cytotoxic T cells in recognizing antigens and stimulating antibody
   production: also called CD4+ cell
_____ Antiviral proteins secreted by T cells
_____ Malignant tumor of a gland in the chest
_____ Found within lymphatic vessels and surrounding tissues throughout the body
_____ Lymphatic tissue in the oropharynx
_____ Collection of lymph tissue under the arm (armpit)
_____ Proteins that aid and regulate the immune response
_____ Malignant tumor of lymph nodes and tissue
_____ Antibodies such as IgG, IgA, IgD that are secreted by plasma cells
_____ Introduction of altered antigens to produce an immune response
_____ Repression of the immune response
_____ Fluid collects within the spaces between cells secondary to lymph vessel obstruction
Chapter Fourteen

SPELLING QUIZ

Name: ____________________________

A. Circle the term that is spelled correctly, and write its meaning:

1. mackrophage  
   macrophage

2. lymh  
   lymph

3. immunoglobulins  
   immunoglobins

4. alergy  
   allergy

5. inguinal nodes  
   ingiunal nodes

6. anaphylaxis  
   anaphilaxis

7. Hodgkin lymphoma  
   Hodgkin lymphoma

8. axilliary nodes  
   axillary nodes

9. lymphocytopenis  
   lymphocytopenia

10. splenectomy  
    spleenectomy

B. Circle the term that is spelled correctly. The meaning of each term is given.

11. Organ in the chest that produces T cells  
    thymus gland

12. Fluid in the spaces between cells  
    interstitial fluid

13. Collection of fluid in tissues  
    lymphedema

14. Proteins that stimulate the growth of T cells  
    interleukins

15. Masses of lymph tissue in the nasopharynx  
    adenoids

16. Introduction of altered antigens to produce an immune response  
    vaccination

17. Inflammation of tonsils  
    tonsillitis

18. Formation of lymph  
    lymphopoiesis
Chapter Fourteen
PRONUNCIATION QUIZ

Name: ______________________________

A. Underline the accented syllables in the following terms:

1. immunology 4. lymphedema 7. macrophage 10. lymphadenopathy
2. hypersensitivity 5. interstitial fluid 8. anaphylaxis

B. Match the term in Column I with its meaning in Column II:

<table>
<thead>
<tr>
<th>Column I</th>
<th>Column II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. anaphylaxis</td>
<td>A. Mass of lymph tissue in the nasopharynx</td>
</tr>
<tr>
<td>2. AIDS</td>
<td>B. Syndrome marked by enlargement of the spleen</td>
</tr>
<tr>
<td>3. cervical nodes</td>
<td>C. Suppression or deficiency of the immune response caused by exposure to HIV</td>
</tr>
<tr>
<td>4. adenoids</td>
<td>D. A hypersensitivity or allergic state involving an inherited predisposition</td>
</tr>
<tr>
<td>5. interferons</td>
<td>E. Exaggerated hypersensitivity reaction</td>
</tr>
<tr>
<td>6. macrophage</td>
<td>F. Antibodies secreted by plasma cells</td>
</tr>
<tr>
<td>7. Hodgkin lymphoma</td>
<td>G. Antiviral proteins secreted by T cells</td>
</tr>
<tr>
<td>8. hypersplenism</td>
<td>H. Lymph nodes in the neck</td>
</tr>
<tr>
<td>9. atopy</td>
<td>I. Malignancy of lymph nodes</td>
</tr>
<tr>
<td>10. immunoglobulins</td>
<td>J. Large phagocyte found in lymph nodes</td>
</tr>
</tbody>
</table>
C. Complete the following terms using the definitions given:

1. __________________________ ectomy  Removal of the spleen
2. _____________________________ oma  Tumor of the thymus gland
3. ____________________________ gram  Record (x-ray) of lymph vessels
4. ________________________ infections  Infectious diseases associated with AIDS
5. lympho ________________________  Formation of lymph
6. ______________________________ ic  Pertaining to poison
Label the diagram below using the terms listed below:

Axillary region
Cervical region
Inguinal region
Large veins in the neck
Lymph capillaries
Lymph nodes

Lymph vessels
Mediastinal region
Mesenteric region
Paraortic region
Right lymphatic duct
Thoracic duct

Name: ______________________________
Mature into plasma cells and secrete antibodies — immunoglobulins (IgM, IgA, IgE, IgD, IgG)

1. Cytotoxic T cell (CD8+) — attach to antigens on cell surface and directly kill the antigen. Secrete cytokines (interferons and interleukins)

2. Helper cells (CD4+) — assist B cells and T cells

3. Suppressor cells (Tregs) — inhibit B and T cells

Helps antibodies kill antigens

Antigen-presenting cells
Chapter Fourteen

REVIEW SHEET QUIZ

Name: ______________________________

A. Give meanings for the following combining forms:

1. inguin/o ________________________ 5. tox/o ______________________________
2. thym/o _________________________ 6. immun/o __________________________
3. axill/o __________________________ 7. splen/o ____________________________
4. cervic/o ________________________ 8. lymphaden/o _________________________

B. Give meanings for the following suffixes and prefixes:

1. -edema _________________________ 6. -oid _____________________________
2. -megaly ________________________ 7. -pathy ____________________________
3. -poiesis _________________________ 8. inter- ____________________________
4. -penia __________________________ 9. hyper- __________________________
5. -phylaxis _______________________ 10. retro- ____________________________
Match the following opportunistic infections associated with AIDS with their descriptions below:

candidiasis  
Cryptococcus  
cryptosporidiosis  
cytomegalovirus  
herpes simplex  
histoplasmosis  
Mycobacterium avium-intracellulare  
Cryptococcus  
Pneumocystis pneumonia  
toxoplasmosis  
tuberculosis  

1. Viral infection (HSV) causing small blisters on the lips, nose, or genitals: ____________________

2. Yeast-like fungal infection overgrows in the mouth (thrush), respiratory tract, and skin: _______________________________________________________

3. Bacterial disease (TB) predominant in the lungs. Symptoms include fever, weight loss, anorexia, and low energy: _____________________________________________

4. Yeast-like fungal infection (crypto) causes lung, brain, and blood infections; found in pigeon droppings, air, water, soil: ___________________________________________________

5. Fungal infection caused by inhalation of dust contaminated with Histoplasma capsulatum; symptoms include fever, chills and lung infection (Histo): _________________________________

6. One-celled organism causes lung infection (PCP) with fever, cough, and chest pain: _________________________________________________________

7. Parasitic infection involving the CNS and causing fever, chills, confusion, hemiparesis and seizures; parasite is found in uncooked pork, raw eggs, and vegetables (Toxo): __________________________

8. One-celled parasitic infection of the gastrointestinal tract, brain, and spinal cord: ___________________________________________________________

9. Bacterial disease (MAI) with fever, malaise, night sweats, diarrhea, and lung and blood infections: ________________________________

10. Virus (CMV) causes enteritis and retinitis; found in semen, saliva, urine, feces, blood, and breast milk: ____________________________________________
Chapter Fourteen

MEDICAL SCRAMBLE

Unscramble the letters to form lymphatic/immune system--related terms from the clues. Use the letters in the squares to complete the bonus term.

1. **Clue:** Swelling due to fluid collection in spaces between tissue
   
   __ __ __ __ __ __ __ __ __ __ __ PE L A M H Y E M D

2. **Clue:** Enlargement of a lymphoid organ in the LUQ
   
   __ __ __ __ __ __ __ __ __ __ __ __ __ N A S L O P Y E L G E M

3. **Clue:** Large phagocyte that engulf other cells; found in lymph nodes and tissues
   
   __ __ __ __ __ __ __ __ __ __ __ __ G A R P A M O H E C

4. **Clue:** A poison
   
   __ __ __ __ __ N O X I T

**BONUS TERM: Clue:** Hypersensitivity reaction

__ __ __ __ __ __ __ __ __ __ __ __
Chapter Fourteen
CROSSWORD PUZZLE

Name: ______________________________

Fill in the crossword puzzle below using the clues listed underneath it.

Across Clues
2. Record of lymph vessels after contrast is injected in the foot, and x-rays are taken to show the lymph.
5. Organ near the stomach that produces, stores, and eliminates blood cells.
6. Hypersensitivity or allergic state with an inherited predisposition. From a Greek word meaning “strangeness”.
7. Malignant tumor of the thymus gland.
9. Tox/o means __________.
10. An exaggerated or unusual hypersensitivity to foreign protein or other substance.
12. Fluid found within lymphatic vessels.
14. Immun/o means __________.
15. Masses of lymph tissue in the oropharynx.

Down Clues
1. Enzyme-linked immunosorbent assay (abbrev).
3. An RNA virus that makes copies of itself by using the path of host cell’s DNA.
8. A state of abnormal hypersensitivity acquired through exposure to particular allergen.
10. Substance capable of causing specific hypersensitivity in the body; pollen, dust.
11. A poison; a protein produced by certain bacteria, animals, and plants.
13. A large phagocyte found in lymph nodes and other tissues of the body.
A. Case Report

This 48-year-old woman had an unexplained anemia with low-grade fever 4 years before her death. Six months before, bronchopneumonia developed, followed by return of severe anemia and continued pyrexia (fever). She was febrile (feverish), appeared pale, and had slight hepatomegaly and splenomegaly. Lymph nodes were palpated in the axillary and inguinal areas, and ascites developed. The chronic anemia did not respond to iron therapy. There was no evidence of blood loss or hemolysis. Diagnosis of lymphoma was confirmed by autopsy.

1. What two organs were enlarged in the patient? ........................................
   A. Liver and lungs
   B. Lungs and spleen
   C. Liver and spleen
   D. Spleen and bone marrow

2. Where were lymph nodes felt? ..........
   A. Groin and armpit
   B. Armpit and chest
   C. Groin and abdomen
   D. Abdomen and armpit

3. What is ascites? .................................
   A. Blockage of the intestine
   B. Edema in the extremities
   C. Collection of fluid in the chest
   D. Collection of fluid in the abdomen

4. What was the probable cause of the patient's anemia? .........................
   A. Chronic blood loss
   B. Destruction of blood
   C. Malignant tumor of lymph nodes
   D. Iron deficiency
B. Symptoms of Hodgkin Lymphoma

The most common initial feature of Hodgkin lymphoma is painless, asymmetrical enlargement of cervical lymph nodes. Symptoms may also originate from compression of neighboring structures by growing tumor masses. For example, cough, dyspnea, dysphagia, and upper extremity edema may result from a mediastinal mass impinging on the tracheobronchial tree, esophagus, or superior vena cava. Edema of lower extremities and urinary or gastrointestinal disturbances may result from retroperitoneal lymphatic involvement. Splenomegaly is present in about half the cases.

1. How do most patients present with Hodgkin lymphoma? 
   A. Lymph nodes enlarged under the arm 
   B. Enlargement of the spleen 
   C. Compression of the trachea 
   D. Lymphadenopathy in the neck

2. How could upper extremity edema occur? 
   A. Tumor pressing on the esophagus 
   B. Tumor blocking the main vein bringing blood to the heart 
   C. Because of dysphagia 
   D. Because of dyspnea

3. What could cause bladder problems? 
   A. Tumor behind the abdomen 
   B. Tumor pressing on the bronchial tubes 
   C. Enlargement of the spleen 
   D. Upper extremity edema
Chapter Fourteen
ANSWERS TO THE QUIZZES

Multiple Choice Quiz

19. C  22. E

Vocabulary Quiz

A
1. cervical nodes
2. antigen
3. adaptive immunity
4. helper T cell
5. adenoids
6. dendritic cell
7. cytotoxic T cell
8. axillary nodes
9. cytokines
10. B cell

B
1. lymph
2. lymph capillaries
3. interferons and interleukins
4. immunoglobulins
5. immunity
6. inguinal nodes
7. lymph node
8. interstitial fluid
9. lymphoid organs
10. immunotherapy
11. paraaortic nodes
12. mesenteric nodes

C
1. plasma cell
2. lymph vessel
3. mediastinal nodes
4. tolerance
5. macrophage
6. monoclonal antibody
7. spleen
8. natural immunity
9. suppressor T cell
10. right lymphatic duct

D
1. tonsils
2. thymus gland
3. toxin
4. vaccine
5. thoracic duct
6. vaccination
7. humoral immunity
8. cell-mediated immunity

Terminology Quiz

A
1. lymphocytopenia
2. immunoglobulin
3. lymphopoiesis
4. lymphocytosis
5. lymphedema
6. lymphoid organs
7. lymphadenopathy
8. splenomegaly
9. lymphadenitis
10. splenectomy

B
1. thymectomy
2. anaphylaxis
3. toxic
4. hypersplenism
5. interstitial fluid
6. autoimmune disease
7. immunosuppression
8. aplasia

Pathology Quiz

A
1. opportunistic infections
2. protease inhibitor
3. human immunodeficiency virus
4. Kaposi sarcoma
5. wasting syndrome
6. reverse transcriptase inhibitor
7. acquired immunodeficiency syndrome
8. CD4+ cells

B
1. thymoma
2. multiple myeloma
3. allergen
4. non-Hodgkin lymphoma
5. Hodgkin lymphoma
6. atopic dermatitis
7. severe combined immunodeficiency disease
8. allergy

Exercise Quiz

A
1. lymph nodes
2. thoracic duct
3. spleen
4. adenoids
5. thymus
6. lymph capillaries
7. right lymphatic duct
8. interstitial fluid
9. groin
10. armpit
11. neck
12. chest
13. B
14. D
15. C
16. E
17. F
18. G
19. A
20. splenectomy
21. lymphadenitis
22. thymoma
23. lymphadenopathy
24. lymphopoiesis
25. lymphocytopenia
26. toxic
27. splenomegaly
28. hypersplenism
29. anaphylaxis
30. allergen
31. AIDS
32. thymectomy
33. Hodgkin lymphoma
34. lymphoid organs
35. lymphedema
36. human immunodeficiency virus
37. histoplasmosis
38. Kaposi sarcoma
39. *Pneumocystis jiroveci* pneumonia
40. computed tomography
41. toxoplasmosis
42. helper T cells
43. immunolectroforesis
44. zidovudine
45. ELISA
46. opportunistic infections

Dictation and Comprehension Quiz

A
1. allergen
2. anaphylaxis
3. atopy
4. axillary nodes

B
5. cytokines
6. helper T cell
7. immunoglobulins
8. immunosuppression
9. inguinal nodes
10. interferons
11. interstitial fluid
12. Kaposi sarcoma
13. lymphadenopathy
14. lymphedema
15. lymphoma
16. protease inhibitor
17. splenomegaly
18. thymoma
19. tonsils
20. vaccination

C
13. B
14. D
15. C
16. E
17. F
18. G
19. A

D
20. splenectomy
21. lymphadenitis
22. thymoma
23. lymphadenopathy
24. lymphopoiesis
25. lymphocytopenia
26. toxic
27. splenomegaly

E
28. hypersplenism
29. anaphylaxis
30. allergen
31. AIDS
32. thymectomy
33. Hodgkin lymphoma
34. lymphoid organs
35. lymphedema

F
36. human immunodeficiency virus
37. histoplasmosis
38. Kaposi sarcoma
39. *Pneumocystis jiroveci* pneumonia
40. computed tomography
41. toxoplasmosis

G
42. helper T cells
43. immunolectroforesis
44. zidovudine
45. ELISA
46. opportunistic infections

Spelling Quiz

A
1. macrophage
2. lymph
3. immunolectroforesis
4. lymphedema
5. interstitial fluid
6. Kaposi sarcoma
7. thoracic duct

B
12. Malignant tumor associated with AIDS; appears as bluish red skin nodules
3. Hypersensitive or allergic state involving hereditary predisposition
13. Disease condition of lymph nodes
17. Enlargement of the spleen
9. Collection of lymph tissue in the groin
1. Substance capable of causing a specific hypersensitivity reaction in the body
16. A drug that is used to treat AIDS by blocking the production of an enzyme
2. An exaggerated or unusual hypersensitivity to a foreign protein
6. Lymphocyte that aids B cells and cytotoxic T cells in recognizing antigens and stimulating antibody production: also called CD4+ cell
10. Antiviral proteins secreted by T cells

Pronunciation Quiz

A
1. immunology
2. hypersensitivity
3. inguinal nodes
4. lymphedema
5. interstitial fluid
6. Kaposi sarcoma
7. macrophage
8. anaphylaxis
9. thoracic duct
10. lymphadenopathy

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Chapter 14  ANSWERS TO THE QUizzes  377

**Diagram Quiz**

1. Lymph capillaries
2. Lymph vessels
3. Lymph nodes
4. Cervical region
5. Axillary region
6. Mediastinal region
7. Mesenteric region
8. Paraaortic region
9. Inguinal region
10. Right lymphatic duct
11. Thoracic duct
12. Large veins in the neck

**Flow Chart Quiz**

1. B cells
2. T cells
3. Complement system
4. Dendritic cells

**Review Sheet Quiz**

1. groin
2. thymus gland
3. armpit
4. neck
5. poison
6. protection
7. spleen
8. lymph node (gland)

**Opportunistic Infections Quiz**

1. herpes simplex
2. candidiasis

**Crossword Puzzle**

1. Lymphedema 3. Macrophage
2. Splenomegaly 4. Toxin

**BONUS TERM:** Anaphylaxis

**Medical Scramble**

1. Lymphedema 3. Macrophage
2. Splenomegaly 4. Toxin

**Practical Applications**

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
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<tbody>
<tr>
<td>1. C</td>
<td>1. D</td>
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<tr>
<td>2. A</td>
<td>2. B</td>
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<tr>
<td>3. D</td>
<td>3. A</td>
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<tr>
<td>4. C</td>
<td></td>
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</tbody>
</table>
## Chapter Fourteen

### Answers to Terminology Section

<table>
<thead>
<tr>
<th>Terminology</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>autoimmune disease</td>
<td>Chronic, disabling disease in which the body produces antibodies against its own tissues. Examples are rheumatoid arthritis and lupus erythematosus.</td>
</tr>
<tr>
<td>immunoglobulin</td>
<td>Protein (antibody produced by plasma cells) that acts to protect the body by destroying antigens.</td>
</tr>
<tr>
<td>immunosuppression</td>
<td>Suppression (stopping) of the immune response.</td>
</tr>
<tr>
<td>lymphopoiesis</td>
<td>Formation of lymph.</td>
</tr>
<tr>
<td>lymphedema</td>
<td>Swelling of tissue due to accumulation of lymph fluid in intercellular spaces.</td>
</tr>
<tr>
<td>lymphocytopenia</td>
<td>Deficiency of lymphocytes in the blood.</td>
</tr>
<tr>
<td>lymphocytosis</td>
<td>Abnormal condition of increase in lymphocytes.</td>
</tr>
<tr>
<td>lymphoid</td>
<td>Derived from lymph tissue.</td>
</tr>
<tr>
<td>lymphadenopathy</td>
<td>Disease of lymph glands (nodes).</td>
</tr>
<tr>
<td>lymphadenitis</td>
<td>Inflammation of lymph glands (nodes).</td>
</tr>
<tr>
<td>splenomegaly</td>
<td>Enlargement of the spleen.</td>
</tr>
<tr>
<td>splenectomy</td>
<td>Removal of the spleen.</td>
</tr>
<tr>
<td>asplenia</td>
<td>Absence of the spleen. This condition may be congenital or result from surgical removal.</td>
</tr>
<tr>
<td>hypersplenism</td>
<td>A syndrome marked by splenomegaly (associated with anemia, leukopenia and thrombocytopenia).</td>
</tr>
<tr>
<td>thymectomy</td>
<td>Removal of the thymus gland.</td>
</tr>
<tr>
<td>toxic</td>
<td>Pertaining to poison.</td>
</tr>
<tr>
<td><strong>Prefix</strong></td>
<td></td>
</tr>
<tr>
<td>anaphylaxis</td>
<td>An exaggerated hypersensitivity reaction to foreign proteins.</td>
</tr>
<tr>
<td>interstitial fluid</td>
<td>Pertaining to fluid that lies between body cells and eventually becomes lymph fluid.</td>
</tr>
</tbody>
</table>