Suspicious Lump Practice Questions

PART I: DIRECTIONS. Each of the numbered items or incomplete statements in this section is followed by answers or by completions of the statement. Select the ONE lettered answer or completion that is BEST in each case.

1. Lymphocytes that are present in the lumen of a splenic sinus are most likely to go directly from there into a/an:
   A. Efferent lymphatic
   B. Marginal zone
   C. Medullary cord
   D. Penicillar arteriole
   E. Pulp vein
   F. Splenic cord
   G. Trabecular sinus

2. Migration of T cell precursors from the bone marrow to the thymus occurs:
   A. Only during embryogenesis
   B. Only during cell-mediated immune responses
   C. Throughout life
   D. Until thymic involution begins at puberty

3. In the __________________ the blood is filtered by macrophages that reside in a reticular cell/reticular fiber stroma.
   A. Cortex of the thymus
   B. Red pulp of the spleen
   C. Germinal centers of the white pulp
   D. Medullary cords of a lymph node
   E. Subcapsular sinus of a lymph node

4. Which of the following statements is true regarding negative selection of thymocytes:
   A. It occurs only during the double negative stage of thymocyte development
   B. It occurs only in Hassall’s corpuscles
   C. It can result in the death or inactivation of cells that recognize “self-antigens”
   D. Cells that survive negative selection leave the thymus mainly via the subcapsular sinus and efferent lymphatics
   E. The great majority of thymocytes survive both positive and negative selection
5. Primary lymphoid nodules:
   A. Are sites to which T lymphocytes preferentially migrate
   B. Are found in primary lymphoid organs but not in secondary lymphoid organs
   C. Are characteristic of the paracortex of a lymph node
   D. Can develop into secondary follicles during a humoral immune response
   E. Consist of a germinal center and a cap (also called a mantle or a corona)

6. Afferent lymphatic vessels:
   A. Are found in all organs except the thymus
   B. Carry antigen-presenting cells such as Langerhans cells to the lymph nodes
   C. Empty directly into the splenic cords in the open circulation of the spleen
   D. Enter lymph nodes at the hilum
   E. Have a stroma of reticular cells and reticular fibers within their lumen

7. Follicular dendritic cells:
   A. Are a type of antigen-presenting cell found in the marginal zone of the spleen
   B. Are also called Langerhans cells
   C. Are found only in lymph nodes
   D. Are involved in events such as antibody class switching in germinal centers
   E. Are the stromal cells of the paracortex of a lymph node

8. The majority of lymphocytes enter the parenchyma of a lymph node directly from:
   A. Afferent lymphatics
   B. Capsular arteries
   C. Central arteries
   D. High endothelium venules
   E. Penicillar arteries

9. Which of the following conditions is most likely to result in enlarged lymph nodes (lymphadenopathy) where the nodes are non-tender (not painful upon palpation):
   A. A normal immune reaction occurring in the node
   B. Polycythemia vera
   C. Primary malignancy of the lymph nodes (lymphoma)
   D. Replication of viruses within the node
   E. Systemic infection due to bacteria in the blood (septicemia)
10. In which of the following locations does the tightest barrier exist between the circulating blood and the surrounding lymphoid tissue:
   A. Marginal zone of the spleen
   B. Medullary cords of a lymph node
   C. Sheathed capillaries of the spleen
   D. Thymic cortex
   E. Thymic medulla

11. Centroblasts, centrocytes, follicular dendritic cells, and macrophages are among the predominant cell types found in:
   A. Germinal centers
   B. Medullary cords
   C. Periarteriolar lymphatic sheath (PALS)
   D. Primary lymphoid nodules
   E. Thymic cortex

12. The spleen is characterized by:
   A. Afferent lymphatics
   B. A subcapsular sinus
   C. A capsule covered by a mesothelium
   D. A cortex and a medulla
   E. Splenic sinuses that carry lymph

13. When a B lymphocyte encounters a foreign antigen for which it is specific, it:
   A. Begins to secrete complement
   B. Differentiates into a natural killer cell
   C. Differentiates into either an interdigitating dendritic cell or a plasma cell
   D. Enlarges and divides repeatedly
   E. Migrates to the bone marrow

14. Macrophages and a reticular fiber stroma are both important elements for trapping particulate antigens. In which of the following locations do both of these elements play a major role in antigen-trapping:
   A. Afferent lymphatics of a lymph node
   B. Splenic cords
   C. Splenic sinuses
   D. Subcapsular sinus of a lymph node
   E. Choices A & C only
   F. Choices B & D only
15. Which of the following is characteristic of the thymus and the lymph nodes, but is not found in the spleen:
   A. A medulla
   B. A mesothelium
   C. Afferent lymphatics
   D. An epithelial stroma
   E. An open circulation
   F. Germinal centers

16. Which of the following is most likely to occur in an immune reaction where the cell-mediated response greatly predominates over the humoral immune response:
   A. Follicular hyperplasia in the white pulp of the spleen
   B. Germinal center formation in the thymus
   C. Paracortical hyperplasia in the regional lymph nodes
   D. Rapid, painless enlargement of the regional lymph nodes
   E. Splenomegaly due to enlargement of the red pulp

17. In the open circulation model of the spleen:
   A. Central arteries are directly continuous with splenic sinuses
   B. Penicillar arterioles deliver red and white blood cells directly into the periarteriolar lymphatic sheath (PALS)
   C. Red cells cross the walls of splenic sinuses to move out of the bloodstream and into the splenic cords
   D. Macrophages in the splenic cords phagocytize old fragmented red cells and begin the process of hemoglobin breakdown and iron reclamation

18. Which of the following correctly describes a function of the normal adult spleen:
   A. Hematopoiesis is a normal finding in the marginal zone of the adult spleen
   B. Immune responses to antigens carried in the lymph occur mainly in the splenic cords
   C. Immune responses to blood-borne antigens occur mainly in the white pulp
   D. Most senescent erythrocytes are destroyed within the splenic sinuses
   E. T cells first develop their receptor for antigen in the PALS

19. DiGeorge syndrome is commonly described as:
A. A disease caused by certain nematode worms that replicate in and block the lymphatics, resulting in severe edema
B. An autoimmune disease characterized by production of autoantibodies that recognize the acetylcholine receptor on skeletal muscle
C. An inherited congenital defect involving malformation of structures derived from the third and fourth pharyngeal pouches
D. An inherited form of anemia that results in excessive destruction of fragile erythrocytes in the spleen

20. Identify the correct statement regarding the thymus:
   A. In positive selection, thymocytes that fail to bind to antigen-presenting cells will die
   B. Involution results in the complete disappearance of functional thymic tissue, usually by the eighth decade of life
   C. Precursors of thymocytes migrate into the thymus only during the first trimester of embryogenesis
   D. The precursor cells that enter the thymus are double positive (CD4+, CD8+) cells
   E. The thymus is essential for life, and cannot be removed at any age

21. Suppose that a naïve T cell (one that has never been activated) enters a lymph node and, after several hours, has still not encountered the antigen for which it is specific. That cell is most likely to:
   A. Die in that node within one day
   B. Leave the node in an efferent lymphatic, return to the blood, and recirculate
   C. Migrate back to the thymus to be re-educated so that it recognizes a different antigen
   D. Survive and remain in that same node for months or years

22. Lymphocytes that are TCR+ and CD4+ are likely to account for the largest percentage of the cell population in:
   A. A medullary cord
   B. A periarteriolar lymphatic sheath
   C. A splenic cord
   D. Germinal centers
   E. The mantle (cap, corona) of a secondary nodule

23. Extensive lymphocyte death is characteristic of lymphoid organs. Which of the following statements about this phenomenon is true:
A. In germinal centers, the dying lymphocytes are cells that have been killed as a result of their direct contact with follicular dendritic cells
B. In the spleen, the dying lymphocytes are older, less flexible cells that fragment in the splenic cords
C. In the thymus, most thymocyte death occurs in the cortex
D. Most of the lymphocyte death that occurs in lymphoid organs is the result of necrosis

24. Involution of the thymus:
   A. Begins at about the time of puberty
   B. Involves replacing cortical and medullary tissue of the thymus with dense regular connective tissue
   C. Is a result of the breakdown of the tight blood-thymus barrier
   D. Is the process by which Hassall’s corpuscles are formed

25. Which of the following vessels are highly impermeable due mainly to the presence of extremely tight junctions between endothelial cells:
   A. Blood vessels in the thymic cortex
   B. Blood vessels in the thymic medulla
   C. Lymphatic capillaries in connective tissue
   D. Splenic sinuses
   E. Trabecular sinuses in a lymph node

26. Lymphocytes that are present in a medullary sinus of a lymph node are most likely to go directly from there into a/an:
   A. Efferent lymphatic
   B. Marginal zone
   C. Pulp vein
   D. Subcapsular sinus
   E. Trabecular sinus

27. Which of the following is an example of what is meant by the “recirculation of lymphocytes”:
   A. The continuous circulation of lymphocytes in the bloodstream
   B. The initial migration of newly formed naïve lymphocytes from a primary lymphoid organ to a secondary lymphoid organ
   C. The circulation of lymphocytes from secondary lymphoid organs to lymph vessels, then to blood vessels, and then back to secondary lymphoid organs
   D. The passage of lymphocytes from splenic cords into splenic sinuses
PART II: DIRECTIONS. The following questions are negatively phrased, as indicated by the capitalized word FALSE or EXCEPT. Select the ONE lettered answer that BEST identifies the false statement.

28. Identify the FALSE statement about the blood-thymus barrier:
   A. It includes a cuff of perivascular connective tissue
   B. It includes endothelial cells that are joined together by tight junctions
   C. It includes endothelial cells that are cuboidal or columnar in shape
   D. It includes thymic epithelial cells (TECs) joined together by tight junctions
   E. It is tight in the cortex

29. Identify the FALSE statement regarding negative selection:
   A. It includes presentation of "ectopic" self-antigens (i.e., antigens characteristic of non-thymic organs) to the thymocytes
   B. It involves binding of thymocytes to cells such as thymic dendritic cells
   C. It is a process that helps to eliminate T cells that might contribute to autoimmune responses
   D. It results in the death of thymocytes that fail to bind to the antigen-presenting cells

30. Lymphoid nodules (follicles) are commonly found in all the following locations EXCEPT:
   A. Appendix
   B. Outer cortex of a lymph node
   C. Palatine tonsils
   D. Thymus
   E. White pulp of the spleen

31. Identify the FALSE statement. Langerhans cells are:
   A. A type of antigen-presenting cell
   B. A type of dendritic cell
   C. Able to bind antigen and carry it to a regional lymph node
   D. Found in the epidermis, usually in the stratum spinosum
   E. The same as follicular dendritic cells