Histology, Janqueira MCQs

By Hind Shaker Suhwail

Blood cells

Q1. Which biochemical component of the erythrocyte cell surface is primarily responsible for determining blood type (eg, the A-B-O system).
a. Fatty acid
b. Carbohydrate
c. Nucleic acid
d. Protein
e. Cholesterol

Q2. What cell in circulating blood is the precursor to microglia and most antigen-presenting cells?
a. Eosinophil
b. Basophil
c. Lymphocyte
d. Monocyte
e. Mast cell

Q3.What is the approximate life span of a circulating erythrocyte?
a. 8 days
b. 20 days
c. 5 weeks
d. 4 months
e. 1 year

Q4.Which cell type has cytoplasmic granules that contain heparin and histamine?
a. Eosinophils
b. Basophils
c. Lymphocytes
d. Monocytes
e. Neutrophils

Q5.A differential cell count of a blood smear from a patient with a parasitic infection is likely to reveal an increase in the circulating
numbers of which cell type?
a. Neutrophils
b. Lymphocytes
c. Monocytes
d. Basophils
e. Eosinophils

Q6.Which of the following blood cells differentiate outside of the bone marrow?
a. Neutrophils
b. Basophils
c. Eosinophils
d. T lymphocytes
e. Megakaryocytes

Q7.Examination of a normal peripheral blood smear reveals a cell more than twice the diameter of an erythrocyte with a kidney-shaped nucleus. There cells are < 10% of the total leukocytes. Which of the following cell types is being described?
a. Monocyte
b. Basophil
c. Eosinophil
d. Neutrophil
e. Lymphocyte

Q8.A 43-year-old anatomy professor is working in her garden, pruning rose bushes without gloves, when a thorn deeply penetrates herforefinger. The next day the area has become infected. She removes the tip of the thorn, but there is still pus remaining at the wound site. Which of the following cells function in the formation of pus?
a. Cells with spherical nuclei and scant cytoplasm
b. Biconcave cells with no nuclei
c. Cells with bilobed nuclei and many acidophilic cytoplasmic
granules
d. e. Very small, cell-like elements with no nuclei but many granules
Cells with polymorphic, multiply lobed nuclei

Q9. A 35-year-old woman's physician orders laboratory blood tests. Her fresh blood is drawn and centrifuged in the presence of heparin as an anticoagulant to obtain a hematocrit. From top to bottom, the fractions resulting from centrifugation are which of the following?

a. Serum, packed erythrocytes, and leukocytes
b. Leukocytes, erythrocytes, and serum proteins
c. Plasma, buffy coat, and packed erythrocytes
d. Fibrinogen, platelets, buffy coat, and erythrocytes
e. Albumin, plasma lipoproteins, and erythrocytes

Answers: 1b, 2d, 3d, 4b, 5e, 6d, 7a, 8e, 9c

Hematopoiesis

Q1. In which of the following cells involved in erythropoiesis does hemoglobin synthesis begin?

a. Orthochromatic erythroblast
b. Polychromatophilic erythroblast
c. Reticulocyte
d. Basophilic erythroblast
e. Proerythroblast

Q2.Which of the following can be used to describe megakaryocytes?

a. Multinucleated
b. Formed by fusion of haploid cells
c. Precursors to bone marrow macrophages
d. A minor but normal formed element found in the circulation
e. Possess dynamic cell projections from which one type of formed element is released

Q3.Which cytoplasmic components are the main constituents of the dark precipitate that forms in reticulocytes upon staining with the dye cresyl blue?

a. Golgi complexes
b. Hemoglobin
c. Nucleoli
d. Nuclear fragments
e. Polyribosomes

Q4.Which process occurs during granulopoiesis but not during erythropoiesis?
a. Cells lose their capacity for mitosis
b. Euchromatin content increases
c. Nucleus becomes increasingly lobulated
d. Overall cell diameter decreases
e. Overall nuclear diameter decreases

Q5. What fate often awaits granulocytes that have entered the marginating compartment?
a. Undergo mitosis
b. Crossing the wall of a venule to enter connective tissue
c. Cannot reenter the circulation
d. Differentiate into functional macrophages
e. Begin to release platelets

Q6.What is the earliest stage at which specific granulocyte types can be distinguished from one another?
a. Myelocyte
b. Band form
c. Reticulocyte
d. Metamyelocyte
e. Promyelocyte

Q7.Which cell type is capable of further mitosis after leaving the hemopoietic organ in which it is formed?
a. Basophil
b. Eosinophil
c. Reticulocyte
d. Lymphocyte
e. Neutrophil

Q8.Shortly after her birth a baby is diagnosed with a mutation in the erythropoietin receptor gene which leads to familial erythrocytosis (familial polycythemia). During the seventh to ninth months of fetal development, the primary effect on her red blood cell production was in which of the following?
a. Liver
b. Yolk sac
c. Spleen
d. Thymus
e. Bone marrow

Q9.A 54-year-old man presents with recurrent breathlessness andchronic fatigue. After routine tests followed by a bone marrowbiopsy he is diagnosed with lymphocytic leukemia. Chemotherapyis administered to remove the cancerous cells, which also destroys the precursor cells of erythrocytes. To reestablish the erythrocytic lineage, which of the following cells should be transplanted?
a. Reticulocytes
b. Orthochromatophilic erythroblasts
c. Megakaryoblasts
d. Basophilic erythroblasts
e. Metamyelocytes

Q10.A smear of blood from a 70-year-old leukemia patient reveals a larger than normal population of cells that have large, round nuclei with 1 or 2 nucleoli. The cytoplasm of these cells shows azurophilic granules. Which of the following forms of leukemia would you suspect?
a. Promyelocytic leukemia
b. Basophilic leukemia
c. Lymphoblastic leukemia
d. Stem cell leukemia
e. Eosinophilic leukemia

Answers: 1d, 2e, 3e, 4c, 5b, 6a, 7d, 8e, 9d, 10a

The Immune System & Lymphoid Organs

Q1.Which function is carried out by all lymphoid tissues and organs?
a. Filtration of lymph
b. Filtration of blood
c. Extramedullary hemopoiesis
d. Production of lymphocytes
e. Destruction of old erythrocytes

Q2.Which cell type gives rise to both memory and effector cells and is primarily associated with humoral immunity?
a. B lymphocyte
b. NK cell
c. Macrophage
d. T lymphocyte
e. Reticular cell

Q3.Which description is true of all secondary (peripheral) lymphoid organs?
a. Capable of antigen-independent lymphopoiesis
b. Contain crypts
c. Contain epithelial-reticular cells
d. Lack connective tissue capsules
e. Contain lymphoid nodules

Q4. Which structure would be most heavily labeled by an immunohistochemical method targeting the CD8 surface antigen?
a. Germinal centers
b. Paracortex
c. Peyer's patch
d. Sheathed arterioles
e. Splenic cords

Q5.A baby is born with a cleft palate and a condition called DiGeorge syndrome, which involves failure of third and fourth pharyngeal pouch derivatives to develop properly. The palate defect is corrected surgically, but regarding the pharyngeal pouch defect the parents are advised that the growing child may expect which of the following health problems?
a. Insufficient B-cell production by lymph nodes in the head and neck
b. Inability to secrete IgA
c. Excessive numbers of circulating but defective erythrocytes
d. Increased oral infections due lack of palatine and pharyngeal
tonsils
e. Conditions related to autoimmunity

Q6. Many immune-related cellular activities are often impaired in aged patients. Which lymphoid organ(s) normally develop less functionality and increasing amounts of adipose tissue with age?
a. Axillary lymph nodes
b. Lingual tonsils
c. Thymus
d. Splenic white pulp
e. Splenic red pulp

Q7.A 12-year-old African-American girl presents with anemia and a large percentage of her peripheral erythrocytes appear sickle-shaped. Genetic testing reveals homozygosity for sickle cell disease. In which of the following sites will the abnormal RBCs be removed from the circulation?

a. Thymic cortex
b. Periarteriolar lymphoid sheathes of splenic white pulp
c. Medullary sinuses of lymph nodes
d. Thymic medulla
e. Splenic cords (of Billroth)

Q8.A 6-year-old boy is brought to the clinic where his mother reports that was bitten by a neighbor's dog two days earlier. The child's right hand is lacerated between the thumb and index finger and this area is inflamed but healing. The doctor's examination reveals small but painless swellings beneath the skin inside the right elbow and arm pit and he explainsto the mother that these are active lymph nodes enlarged in response to the infection in the hand. What has produced the swelling?

a. Increased flow of lymph through the nodes' afferent lymphatics
b. Formation of germinal centers for B-cell proliferation in each node's cortex
c. d. Arrival of antigen-presenting cells in each node's medulla
Enlargement and increased activity of the nodes' high endothelial venules
e. Increased thickness of each node's paracortex

Answers : 1d , 2a , 3e , 4b , 5e, 6c , 7e , 8b