HLS HISTOLOGY

BY ODAI AL- REFAI

CORRECTED BY HOSAM THEEB & SABA AL SMADI

- All of the following cells can be seen in the cortex of the thymus EXCEPT:
- a. Macrophages.
- b. Dendritic cells.
- c. Reticular epithelial cells.
- d. Double positive T cells.
- e. Double negative T cells.
- Answer: b

- Which of the following cells increase in level during parasitic infections:
- a. Neutrophils.
- b. Basophils.
- c. Eosinophils.
- d. Lymphocytes.
- e. Monocytes.
- answer: c

- The precursor of macrophages is a:
- a. Binucleated cell.
- b. Biconcave cell with no nuclei.
- c. Bilobed cell with acidophilic granules.
- d. Nucleated cell with C-shaped nucleus and frosty glass appearance.
- e. none of the above.
- Answer: d

- Which of the following cells are the most abundant type of granulocytes:
- 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. Very small cell like elements with no nuclei but many granules.
- E. Cells with polymorphic multi-lobed nuclei.
- Answer: e

- Reticulocytes are stained using:
- a. Giemsa stain.
- b. Wright stain.
- c. H&E stain.
- d. Brilliant cresyl blue stain.
- e. leishmen stain.
- Answer: d

- Which of the following is not a feature of the thymus:
- a. Capsule.
- b. Lobules.
- c. Lymphatic follicles.
- d. Hassall corpuscles.
- e. Septae.
- Answer: c

- Which of the following statements is correct:
- a. Half of the lymphocytes enter the lymph nodes via blood vessels, while the other half enters via lymph.
- b. All lymphocytes enter the lymph nodes via post capillary venules, while none enter via lymph.
- c. Most lymphocytes enter the lymph nodes via post capillary venules, while about 10% enter through the lymph.
- d. Most lymphocytes enter the lymph nodes via lymph, while about 10% enterocyte the post capillary venules.
- Answer: c

- Which of the following KEY features is characteristic of lymph nodes:
- a. Cortex
- b. Afferent vessels
- c. Medulla
- d. Sinuses
- e. lobes
- Answer: b

- The last mitotic stage in granulopoiesis is:
- a. Myelocyte.
- b. Promyelocyte.
- c. Metamyelocyte.
- d. Band cell.
- e. Myeloblast.
- Answer: a

- Regarding erythrocytes chose the WRONG statement:
- a. The eosinophilia of the erythrocyte is due to hemoglobin.
- b. About one week is needed for the formation of erythrocytes from proerythroblasts.
- c. Erythrocytes appear as electron dense and homogenous under EM.
- d. Rouleaux formation is a reversible condition due to surface tension caused by erythrocyte biconcave surface in slow circulation.
- e. Mature erythrocytes are capable of producing a little amount of hemoglobin.
- Answer: e

- All of the following changes occur during erythropoiesis EXCEPT:
- a. Cytoplasm changes to acidophilic.
- b. Specific granules appear in cytoplasm.
- c. Overall cell size decrease.
- d. Nucleus disappears.
- e. Cells lose their capacity for mitosis.
- Answer: b

- Which of the following may act as an antigen presenting cell:
- a. Eosinophis.
- b. Basophils.
- c. B lymphocytes.
- d. Natural killer cells.
- e. Mast cells.
- Answer: c

- Regarding platelets chose the WRONG statement:
- a. Contain outer hyalomere and inner granulomere.
- b. Originate from megakaryocytes.
- c. Outer hyalomere contain microtubules and microfilaments.
- d. Are non-nucleated cytoplasmic fragments.
- e. Lambda granules contain serotonin.
- Answer: e

- Which of the following lymphatic structures has afferent lymphatic vessels:
- a. Lingual tonsils.
- b. Thymus gland.
- c. Lymph node.
- d. Spleen.
- e. Palatine tonsils.
- Answer: c

- The deep cortex in a lymph node contains:
- a. Macrophages.
- b. Dendritic cells.
- c. T lymphocytes.
- d. Mature B lymphocytes.
- E. Dividing B lymphocytes.
- Answer: c

- Cell with c shaped single non-lobulated nucleus:
- A. mast cell.
- B. eosinophil.
- C. neutrophil.
- D. monocyte.
- Answer: d

- Lymphocytes, choose the CORRECT statement:
- a. Are produced only in the bone marrow.
- b. Are the most abundant type of leucocytes.
- c. Are produced only in the lymphoid tissues.
- d. Are granular leucocytes.
- e. Are produced in the bone marrow & in the lymphoid tissues.
- Answer: e

- Which description is true of all primary lymphoid organs:
- a. Contain crypts.
- b. Contain epithelial-reticular cells.
- c. Lack of connective tissue capsules.
- d. Are sites for antigen exposure.
- e. Are capable of antigen-independent lymphopoiesis.
- Answer: e

- The precursor cells of granulocytes are destroyed by radiotherapy. To reestablish the granulocytic lineage, which of the following cells should be transplanted:
- a. Promyelocytes.
- b. Metamyelocytes.
- c. Promonocytes.
- d. Band cells.
- e. Myelocytes.
- Answer: a

- Removal of the old and aged erythrocytes from the circulation:
- a. Is due to the dilated endothelium and large pores in the lining of the sinusoids of the spleen.
- b. Takes place in the marginal zone sinuses.
- c. Occurs in the lymph node.
- d. Is the function of splenic cords.
- e. a+b.
- Answer: a

- Which of the following statements is NOT CORRECT:
- a. Dendritic cells trap antigens on their surface and present them to T or B cells.
- b. Interdigitating dendritic cells are found in the thymus-dependent zones of the lymph nodes and spleen.
- c. Follicular dendritic cells can present an antigen not associated with MHC to a B cell.
- d. The first cells to be activated in a secondary immune response are memory B cells.
- Answer: b

- Which of the following is NOT true of neutrophilia:
- a. Neutrophilia is not always associated with an increased production of neutrophils.
- b. Apparent neutrophilia results in the migration of neutrophils from the marginating compartment to the circulating one.
- c. Intense muscular exercise increases the number of neutrophils for many days.
- d. Band cells and metamyelocytes can be seen sometimes in certain bacterial infections.
- e. Glucocorticoids increase the mitotic activity and result in increased production of neutrophils.
- Answer: c

- Which of the following is the correct pathway when one lymph node sends a lymphocyte to educate another lymph node about antigenic stimulation:
- a. Post-capillary venules -Thoracic duct - Systemic Circulation - Efferent lymphatic vessel.
- b. Afferent lymphatic vessel - Post-capillary venules - Efferent lymphatic vessel.
- c. Afferent lymphatic vessel - Thoracic duct - Systemic Circulation - Efferent lymphatic vessel.
- d. Afferent lymphatic vessel - Thoracic duct - Efferent lymphatic vessel.
- e. Efferent lymphatic vessel - Thoracic duct - Systemic Circulation – Post capillary venules.
- Answer: e

- Blood formed elements, choose the wrong statement:
- a. Erythrocytes lack class 1 MHC molecules.
- b. Both basophil and mast cell are granulated but basophil nucleus is lobulated while the mast cell nucleus is round.
- c. Human thrombocytes have, in contrast to erythrocytes, never been individual nucleated cells.
- d. The Internum of eosinophilic granules contains major basic protein.
- e. Most neutrophils in female peripheral blood normally show barr bodies.
- Answer: e

- The presence of which one of the following characteristics is of the least value in distinguishing lymph nodes from spleen:
- a. High endothelial venules.
- b. Afferent lymphatic vessels at capsule.
- c. Lymphatic sinuses.
- d. Stromal reticular tissue.
- e. Cortical lymphatic follicles.
- Answer: d

- In the spleen, the plasma cells are found mainly in:
- a. Splenic sinuses of the splenic red pulp.
- b. Periarteriolar lymphoid sheaths of splenic white pulp.
- c. Primary follicles of splenic white pulp.
- d. Germinal centers of Malpingian corpuscles.
- e. Cords of Billroth of the splenic red pulp.
- Answer: e

- Lymphatic organs, choose the WRONG statement:
- a. Blood lymphocytes enter the spleen through marginal zone sinuses and enter the lymph nodes through postcapillary venules.
- b. Aggregations of lymphocytes occupy the majority of splenic parenchyma.
- c. The variation in color intensity of thymic lobules (cortex and medulla) is attributed to the density of thymocytes.
- d. Cells with TCR proteins that bind to MHC-1 will express CD8 proteins at the end of thymic education.
- e. PALS area in spleen and paracortex in lymph nodes are considered thymus dependent zones.
- Answer: b

- Thrombocytes, choose the WRONG statement:
- a. Microtubules and microfilaments are found in the outer marginal bundle.
- b. Have thick glycocalyx.
- c. Originate from bone marrow cells with many dynamic cell projections.
- d. Often form basophilic clumps in histological preparations.
- e. Formation of germinal centers for B-cell proliferation in each node's cortex.
- Answer: e

- Regarding granulopoiesis, choose the WRONG statement:
- a. Azurophilic granules first appear at the promyelocyte stage.
- b. Secondary granules first appear at the myelocyte stage.
- c. Metamyelocytes have kidney-shaped nuclei and cannot divide.
- d. Both types of granules in granulopoiesis cells are synthesized by the free ribosomes.
- e. Band cells are almost mature granulocytes but without segmented nuclei.
- Answer: d

- The presence of which one of the following cells is of least value in distinguishing the spleen from the thymus:
- a. Activated B cells.
- b. Fibroblasts in capsule and trabeculae.
- c. Endothelial cells with tight junctions and thick basement membranes.
- d. Reticular epithelial cells.
- e. Perisinusoidal macrophages.
- Answer: b

- Diffuse lymphatic tissue, choose the WRONG statement:
- a. Peyer's patches are composed of Lymphatic nodules with a thin underlying connective tissue capsule.
- b. M cells are intestinal epithelial cells overlying the diffuse lymphatic tissues.
- c. The basement membrane overlying lymphatic nodules of Peyer's patches is highly porous.
- d. Pharyngeal tonsils are covered by respiratory epithelium.
- e. Palatine tonsils are partly encapsulated and covered by nonkeratinized stratified squamous epithelium.
- Answer: a

- Which one of the following is a correct pair:
- a. Basophil / histaminasease.
- b. Eosinophil / heparin.
- c. Basophil / basic protein.
- d. Basophil / histamine.
- Answer: D

- In parasitic infection which of the following increases:
- a. Cells with a basophilic granular s-shaped nucleus.
- b. Cells with acidophilic granular bilobular nucleus.
- c. Cells without specific granules.
- d. Cells having multilobed nucleus.
- Answer: b

- Which statement is wrong about granulopoiesis:
- a. It takes around 2 weeks.
- b. Precursors have lobulated nucleus.
- c. Some of the Precursors have intended nucleus.
- d. All choices are true.
- Answer: B

- Cell that contain bi lobed nucleus and large granules that obscure its nucleus:
- a. monocyte.
- b. eosinophil.
- c. basophil.
- d. neutrophil.
- Answer: c

- T cells in spleen are mostly presented in:
- a. lymphoid follicles.
- b. splenic cords.
- c. splenic sinuses.
- d. PALS.
- Answer: d

- Which of the following is false:
- a. neutrophils phagocytic activity is enhanced by the presence of complement.
- b. absence of barr body in neutrophils and other body cells indicate true male (XY).
- c. Neutrophils are called cells of chronic inflammation.
- answer : c

- Which of the following is wrong about ultrastructure of platelets:
- a. Dense tubular system (Ca+) is in peripheral zone.
- b. Alpha granules: clotting factors + serotonin.
- c. They have thick glycocalyx.
- d. Hyalomere contains cytoskeleton and membranous channels while Granulomere contains granules and organelles.
- answer: b

- Cytotoxic T lymphocytes' marker:
- a. CD45+.
- b. CD34+.
- c. CD3+.
- d. CD19+.
- e. CD8+.
- answer: e

- Not strictly a function of the blood:
- a. Maintains homeostasis.
- b. Transports hormones and vitamins.
- c. Plays a role in hemostasis.
- d. Carrying oxygen and CO2.
- e. defence against microbes and toxins.
- Answer: a

- In parasitic infection which of the following increases:
- Answer: Cells with acidophilic granular bilobular nucleus

- Correct sequence of blood cells producing sites:
- Answer: Yolk sac -> Liver -> Bone marrow

- all of the following are functions of cortical TEC except:
- Answer: Expression of special proteins

- Wrong about the spleen:
- Answer: like HEC of the lymph node, marginal sinuses only allow lymphocytes to go to the spleen

- Choose the wrong statement about spleen:
- Answer: it contains post capillary venules

- What can be found inside the red bone marrow:
- Answer: Hematopoietic stem cells + sinusoidal capillaries + reticular tissue

- Choose the wrong statement:
- Answer: Granulocytes have irregular shape in blood, and a spherical shape in connective tissue

- Which statement is wrong about granulopoiesis:
- Answer: Precursors have lobulated nucleus

- Which of the following cells their granules contain peroxidase and histaminase:
- Answer: eosinophil

- Wrong about WBCs:
- Answer: eosinophils are more phagocytic and bactericidal than neutrophils

- Activated B lymphocytes in spleen are located in:
- Answer: Malpighian corpuscles

- Wrong about granulopoiesis:
- Answer: peripheral blood count of neutrophils is an absolute measure of their total count

- Wrong about blood:
- Answer: special type of CT that originates from *endoderm*

- Choose the wrong statement:
- Answer: Erythrocyte contains granules

- Cell with the same size of erythrocyte and blue cytoplasm with large nucleus:
- Answer: lymphocyte

THE END