Lymphoma Tumor Board Quiz! Laboratory Hematology: Basic Cell Morphology





CABOT RINGS

Cabot rings in a patient with hemolytic anemia. Cabot ring (red arrow) and Howell-Jolly body (blue arrow).

Observed in anemia and lead poisoning & certain other disorders of red blood cell production.



ROULEAUX

Rouleaux formation in a patient with plasma cell myeloma. Rouleaux formation refers to the stacking of 4 or more red blood cells. Red cell membranes have a negative charge (*zeta* potential) that causes red cells to repel each other. In the presence of increased positively charged plasma proteins such as fibrinogen or immunoglobulins, the negative charge on the red cell surface is diminished, allowing red cells to stick together.



BASOPHILIC STIPPLING

A peripheral smear from a 3-year-old who presented with a hemoglobin of 9.5 g/dl is shown. Variable-sized multiple basophilic inclusions are present in a number of the RBCs, most evident in the polychromatophilic erythrocytes.



DÖHLE BODIES

Peripheral smear from a 7-year-old who presented with bacterial sepsis is shown. The two neutrophils show increased cytoplasmic granularity and the cytoplasm contains several light blue staining inclusions termed Döhle bodies.



GIANT PLATELET

A giant platelet is seen in the middle of the microscopic field. This platelet is as large or larger than many of the red cells surrounding it. Such cells are seen in myeloproliferative neoplasms or disorders associated with increased platelet destruction.



NORMAL PLATELET

The granular appearance of the platelets helps to distinguish them from artifact in the peripheral smear.



NEUTROPHIL

A neutrophil in the peripheral blood has condensed chromatin with a pink cytoplasm (MacNeal Tetrachrome 1000x).



HYPOSEGMENTED NEUTROPHIL

Wright stain showing a band (left) and a Pseudo-Pelger-Huët neutrophil (right) in the peripheral blood of a patient with a Chronic Myeloproliferative Disorder, Unclassified. Pelger-Huët anomaly is an autosomal dominant benign disorder, while Pseudo-Pelger-Huët anomaly (PHA) is an acquired disease. The presence of PHA cells on a blood film may reflect an underlying myeloproliferative disease (classically CML) or primary myelofibrosis, and should trigger prompt investigation.



HYPERSEGMENTED NEUTROPHIL

Five nuclear lobes are seen.



NEUTROPHILIA

Neutrophilia with a left shift can be seen in response to infection or inflammation.



EOSINOPHILS

Eosinophils are slightly larger than neutrophils and have a cytoplasm filled with coarse reddish orange granules.



EOSINOPHILIC MYELOCYTE

Characteristic specific granules are easily recognizable. The nucleus is just beginning the process of indentation which will eventually result in the lobulation apparent in the more mature forms.



BASOPHIL

A basophil in the peripheral blood is characterized by large, dark, blue-purple granules that obscure the nuclear contour (MacNeal Tetrachrome 1000x).



MONOCYTE

Circulating monocyte is lightly basophilic with a lobulated nucleus (MacNeal Tetrachrome 1000x)



ATYPICAL LYMPHOCYTE

This atypical lymphocyte has a large amount of pale blue cytoplasm. The nucleus has a condensed chromatin pattern which is characteristic of lymphoid cells.



VARIANT LYMPHOCYTES

"Variant" or "atypical" lymphocytes can have a variety of appearances. These cells have ample basophilic cytoplasm but retain the "clumped" nuclear chromatin pattern characteristic of lymphocytes.



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Lymphoid leukocytosis.

(A) Infectious mononucleosis with a reactive lymphocytosis including an immunoblast at top. Note the pleomorphism of the lymphocytes. (B) A reactive lymphocytosis is seen in this patient with massive trauma due to a vehicular accident. (C) Large granular lymphocytosis, reactive. (D) CLL with characteristic small, round lymphocytes containing coarse, blocky chromatin. (E) Prolymphocytoid transformation in CLL. (F) Splenic marginal zone lymphoma with villous lymphocytes containing bipolar cytoplasmic projections. (G) Blastic MCL. (H) Lymphoplasmacytic lymphoma. (I) Circulating follicular lymphoma with clefted lymphoma cells.



MEGAKARYOCYTE

A megakaryocyte is a large cell with an eccentric multilobulated nucleus and granular cytoplasm.