

# PathMD™: Board Review Letter

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Hematopathology

Volume 3, Number 1

1. In a normal patient, how long do reticulocytes persist?
  - a. 24 hours
  - b. 48 hours
  - c. 72 hours
  - d. 5 days

Answer: A. In a normal patient reticulocytes persist for ~24 hours. In cases of anemia, the immature RBCs may be released early from the bone marrow, and therefore circulate for a longer period of time. This is why there are correction factors for reticulocyte response in anemic patients based on the hematocrit. (Kjeldsberg, p. 3)

2. A 22 y/o male presents with fairly rapid onset of adenopathy. A lymph node biopsy is performed and images are shown from this case. Additional studies by FISH are positive for a myc gene translocation involving chromosome 8 and another unknown chromosome. Based on the findings, what is the best diagnosis?
  - a. Diffuse Large B-Cell Lymphoma, Germinal Center Immunophenotype
  - b. Diffuse Large B-Cell Lymphoma, Activated Immunophenotype
  - c. Atypical Burkitt Lymphoma
  - d. Plasmablastic Lymphoma
  - e. Follicular Lymphoma, Grade 3

Answer: B. This will probably be classified as a diffuse large B-cell lymphoma (DLBCL), unclassified, when the new WHO classification system comes out in late 2008 or early 2009. The presence of MUM-1 positivity and CD10 negativity place it into an activated phenotype. These have been shown to be more aggressive with shorter survival periods compared to a germinal center immunophenotype (CD10 or bcl-6 +, MUM-1 negative). The IHC pattern of Burkitt lymphoma (BL) is bcl-2 negative and CD10 and CD20 positive. Ki-67 should be near 100%. MUM-1 can be positive in a minority of BL cases. Plasmablastic lymphoma is usually associated with HIV infection and is CD138 positive. There is no follicular pattern or CD10 positivity to support any type of follicular origin in this case. The presence of a myc translocation associated with an otherwise intermediate grade lymphoma is of significant interest recently, as these cases often behave more aggressively, and some advocate more aggressive therapy.

3. A 32 y/o female presents with fatigue. Laboratory studies show a low RBC count, decreased hemoglobin/Hematocrit, decreased MCV, increased RDW, and an iron saturation of 17%. What is the best diagnosis, and which piece of information is most helpful in distinguishing it from other possible answers listed?
  - a. Iron deficiency anemia, iron saturation
  - b. Thalassemia, RDW
  - c. Iron deficiency, MCV
  - d. Thalassemia, RBC count
  - e. Iron deficiency anemia, increased RDW

Answer: E. Iron deficiency anemia and thalassemia are both microcytic hypochromic anemias. They differ in several ways. Thalassemia usually has an increased RBC count and normal RDW, whereas iron deficiency anemia usually has a decreased RBC count and increased RDW. Iron saturation can cause confusion in that it can be decreased in thalassemia (although usually >15%), which results in some overlap with iron deficiency.

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4. Coarse basophilic stippling of RBCs is associated with which of the following:
- Lead intoxication
  - Many anemias
  - Thalassemia
  - Both A & C
  - All of the above

Answer: D. Coarse basophilic stippling is associated with both lead intoxication and thalassemias. Fine stippling can be seen in many different anemias. (Kjeldsberg, p. 4)

5. A patient undergoes an EGD for epigastric pain. Nodularity is noted in the duodenum and biopsies are obtained. Based in the images and immunohistochemical (IHC) findings, which of the following are true?
- This is an aggressive lymphoma requiring treatment similar to other intermediate grade lymphomas
  - CD43 is positive in approximately 50% of cases and is specific for the diagnosis
  - If associated with *H. pylori* infection, treatment of infection may result in resolution of lymphoma
  - Although unusual this is an example of a small bowel follicular lymphoma
  - All of the above are correct

Answer: C. This is a case of MALT lymphoma arising in the small bowel. If this were found in the stomach with the presence of *H. pylori*, then there would be a good chance the lymphoma would resolve with treatment for *H. pylori*. MALT lymphoma is a low-grade lymphoma, and ~50% of cases are CD43 positive. CD43 is a T-cell marker that is sometimes abnormally expressed in B-cell lymphomas. It is not specific for a particular subtype of lymphoma. A reactive infiltrate with germinal centers may be associated with a MALT lymphoma, so don't let the presence of reactive germinal centers dismiss the possibility of lymphoma.

6. What is the etiology of a Pappenheimer body?
- Nuclear remnant
  - Denatured hemoglobin
  - Mitochondrial remnant
  - RNA

Answer: Pappenheimer bodies represent iron-containing mitochondria or siderosome. Howell-Jolly bodies are nuclear remnants, and denatured hemoglobins are usually removed from RBCs in the spleen with resultant bite cells. RNA is what shows up in RBCs that are classified as reticulocytes. (Kjeldsberg, p. 4)

7. All of the following are often microcytic anemias EXCEPT:
- Iron deficiency
  - Thyroid disease
  - Thalassemia
  - Hemoglobin H disease

Answer: B. Thyroid disease usually manifests as a macrocytic anemia. All of the others are typically associated with microcytic anemias. (Kjeldsberg, p. 7)

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8. Which of the followings is more likely to be a cause of a macrocytic anemia with a normal RDW?
- Thyroid disease
  - Aplastic anemia
  - Alcohol use
  - Hemolytic anemia
  - Folate deficiency

Answer: B. Macrocytic anemia with a normal RDW is more likely to be associated with aplastic anemia or a myelodysplasia. (Kjeldsberg, p. 8)

9. What is the most common cause of anemia in children under the age of 4 years?
- Congenital anemia
  - Parvovirus
  - Iron deficiency
  - Thalassemia

Answer: C. Iron deficiency is the cause of >98% of cases of anemia in children under the age of 4 years. (Kjeldsberg, p. 12)

10. An anemic patient (Hct. = 25%) is noted to have 6% reticulocytes circulating in the peripheral blood. What is the corrected reticulocyte count?
- 1%
  - 3%
  - 10.8%
  - 12%

Answer: B. The corrected reticulocyte count attempts to take into account red cell production for a specific hematocrit. Corrected Reticulocyte Count = (% reticulocytes x Hct.)/45. Therefore in this case CRC=(.06 x 25)/45 = 3%. (Kjeldsberg, p. 13)

References:

*Practical Diagnosis of Hematologic Disorders.* CR Kjeldsberg, ASCP 2006.

**Notes for question set:<sup>1</sup>**

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<sup>1</sup> PathMD strives for the highest quality and accuracy. However, the *PathMD: Board Review Letter* is for review purposes and not meant for clinical decision making. It should not be used in place of review of primary reference texts and the current medical literature. If inaccuracies are identified, please notify us so that a correction may be published. (info@PathMD.com)